Information on

Advanced PC Configuration

and

SIMATIC NCM PC

Content

- History of the document
- Supported and not supported boards and software
- Advanced PC Configuration – Change to the SIMATIC NET PC-Software CD 07/2001 (Chapter 4: Part of the installation manual “SIMATIC NET PC-Software CD 07/2001“)
- Configuring PC Stations with SIMATIC NCM PC - Manual and Quick Start
- Part of the catalogue IK PI 2001 for PC boards and software
- Part of the catalogue IK PI 2000 for PC boards and software

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History of the document

Release	Dated	Changes compared to the previous release
01	07/2001	First release of this information collection on the items Advanced PC Configuration and NCM PC.

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Supported and not supported boards and software

The following components are ***supported*** by Advanced PC Configuration:

Boards	In relation with SIMATIC NET Software …	Described in catalogue
PROFIBUS		
CP 5613/5613FO, CP 5614/5614FO	DP-5613/Windows from V6.0 on S7-5613/Windows from V6.0 on FMS-5613/Windows from V6.0 on CP5613 / CP5614 Software /Windows from V6.0 on	IK PI 2001
CP 5511	SOFTNET-DP/Windows from V6.0 on SOFTNET-S7/Windows from V6.0 on SOFTNET-DP-Slave/Windows from V6.0 on	IK PI 2001
CP 5611 (and integr. PB interfaces in the IPCs/PGs -> Prerequisite: CP 5611 compatible)	SOFTNET-DP/Windows from V6.0 on SOFTNET-S7/Windows from V6.0 on SOFTNET-DP-Slave/Windows from V6.0 on	IK PI 2001
Industrial Ethernet		
CP 1613	S7-1613/Windows from V6.0 on PG-1613/Windows from V6.0 on	IK PI 2001
CP 1512*	SOFTNET-S7/Windows from V6.0 on SOFTNET-PG/Windows from V6.0 on	IK PI 2001
CP 1612* (and integr. Ethernet interfaces of the IPCs/PGs)	SOFTNET-S7/Windows from V6.0 on SOFTNET-PG/Windows from V6.0 on	IK PI 2001

* on preparation

More details can be found in description „SIMATIC NET PC-Software CD 07/2001“ chapter 4.3 and chapter 4.4.

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The following components are ***not supported*** by Advanced PC Configuration:

Boards	In relation with SIMATIC NET Software …	Described in catalogue
PROFIBUS		
CP 5613/5613FO, CP 5614/5614FO	DP-5613/Windows up to V2.1 S7-5613/Windows up to V2.1 FMS-5613/Windows up to V2.1 CP5613 / CP5614 Software /Windows up to V2.1	IK PI 2000
CP 5511	SOFTNET-DP/Windows up to V5.3 SOFTNET-S7/Windows up to V5.3 SOFTNET-DP-Slave/Windows up to V1.2	IK PI 2000
CP 5611 (and integr. PB interfaces of the IPCs/PGs -> Prerequisite: CP 5611 compatible)	SOFTNET-DP/Windows up to V5.3 SOFTNET-S7/Windows up to V5.3 SOFTNET-DP-Slave/Windows up to V1.2	IK PI 2000
CP 5412 (A2)	DP-5412/Windows up to V5.2 S7-5412/Windows up to V5.2 FMS-5412/Windows up to V5.2 PG-5412/Windows up to V5.2	IK 10 1999
CP 5411	SOFTNET-DP/Windows up to V5.3 SOFTNET-S7/Windows up to V5.3 SOFTNET-DP-Slave/Windows up to V1.2	IK 10 1999
MPI-ISA (and integr. Interfaces of IPCs/PGs, which are not compatible to CP 5611)		
Industrial Ethernet		
CP 1613	TF-1613/Windows all releases S7-1613/Windows up to V2.1 PG-1613/Windows up to V2.1	IK PI 2000
CP 1413	TF-1413/Windows all releases S7-1413/Windows all releases PG-1413/Windows all releases	IK 10 1999
CP 1511	SOFTNET-S7/Windows up to V3.3 SOFTNET-PG/Windows up to V3.3	IK 10 1999
CP 1411	SOFTNET-S7/Windows up to V3.3 SOFTNET-PG/Windows up to V3.3	IK 10 1999

More details can be found in description „SIMATIC NET PC-Software CD 07/2001“ chapter 4.3 and chapter 4.4.

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4 Advanced PC Configuration – Switching to the SIMATIC NET PC Software CD 07/2001

4.1 Introduction to Configuration

Description of Advanced PC Configuration

Advanced PC Configuration is the new tool with which you can commission a PC station as part of an industrial communication network. SIMATIC NET supports the option of using Advanced PC Configuration on a central engineering station to configure PC stations in the same way as programmable controllers. A networked PC with the SIMATIC NCM PC V5.1 Service Pack 2 or STEP 7 V5.1 Service Pack 2 program is used as the engineering station.

Features

Using Advanced PC Configuration means certain changes in the way you configure in your project:

- All settings are made and downloaded to the PC station with one tool during configuration. This tool is the SIMATIC NCM PC V5.1 Service Pack 2 or STEP 7 version 5.1 Service Pack 2 program or higher.
- Properties that were previously configured using the “Set PG/PC Interface” program are now part of the configuration and are downloaded to the PC station. These include, for example, the station address and the bus parameters. Creating several databases is no longer necessary.
- Properties that were previously specified in various configuration programs are now configured in SIMATIC NCM PC V5.1 Service Pack 2 or STEP 7 Version 5.1 Service Pack 2 or higher. Examples of such configuration tools include COML S7, COM PROFIBUS.
- Configuration parameters for the OPC Server that were previously stored in TXT files are now configured in SIMATIC NCM PC V5.1 Service Pack 2 or STEP 7 Version 5.1 Service Pack 2 and downloaded to the PC station.

The Tools of Advanced PC Configuration

Advanced PC Configuration includes the following tools:

- **Commissioning Wizard**
  The Commissioning Wizard allows simple and consistent commissioning of all modules and user programs supported by Advanced PC Configuration. It guides the user step by step through the installation and configuration of the PC station.

- **Configuration Console**
  The Configuration Console is a snap-in program embedded in the **M**icrosoft **M**anagement **C**onsole (MMC) and provides a wide range of options for configuring PC hardware components and PC user programs as well as providing diagnostic functions. Settings for the OPC servers that ship with the communication software are also made in the Configuration Console.

- **SIMATIC NCM PC**
  With SIMATIC NCM PC V5.1, Service Pack 2, a new configuration tool for STEP 7-compatible PC configuration is available.

- **Station Configuration Editor**
  The Station Configuration Editor is the user interface of the Station Manager; it allows access to the component management of the PC station. In this sense, components are the modules and user programs involved in communication tasks. The Station Configuration Editor can also be used for diagnostic purposes.

Supported Modules

You will find a list of modules supported and not supported by Advanced PC Configuration in the “hinw_e.rtf” file on the SIMATIC NET product CD (**<CD drive> ➜ sw ➜ cdintern ➜ hinw_e.rtf**).

Consequences

The following sections explain the effects of switching to Advanced PC Configuration.

You should also read the chapter “Installation and Commissioning” in the HTML document “Industrial Communication for PG/PC” supplied on the CD.

4.2 LDB and XDB Databases

4.2.1 Introduction

Consequences of the New Central Configuration

As of the SIMATIC NET PC software CD 07/2001, all SIMATIC NET PC software products have central configuration and download mechanisms. The configuration data are now stored in XDB databases.

The previously used LDB databases can no longer be used.

Existing XDB databases can continue to be used after importing them into the central data management of the PC station, the Station Configuration Editor.

Using the Databases and Central Data Management

The graphics on the following pages illustrate the new situation:

- Configurations in previous product versions and the use of databases
- New, totally integrated and uniform configuration with the Station Configuration Editor
- New, totally integrated and uniform configuration within Advanced PC Configuration with SIMATIC NCM PC V5.1 Service Pack 2/STEP 7 Version 5.1 Service Pack 2 or higher.

  The local or remote configuration data are downloaded using SIMATIC NCM PC/STEP 7. It is also possible to transfer the configuration data in the form of an XDB database that is also created with the Station Configuration Editor.

The OPC server and its protocol-specific adapters are optional elements and are shown with broken lines.

4.2.2 Configurations up to SIMATIC NET CD 05/2000

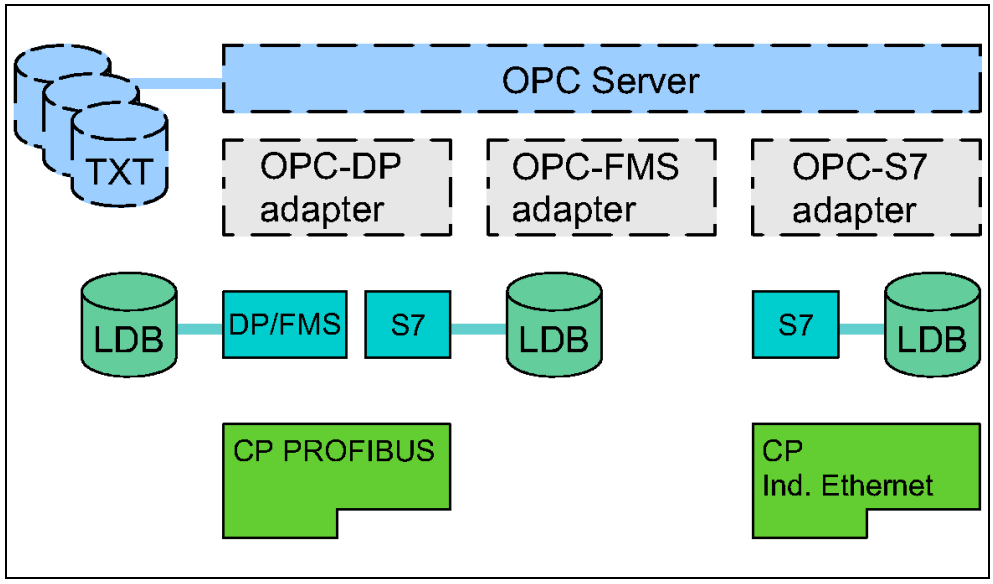
Description

A configuration created with the tools of the SIMATIC NET product CDs up to and including SIMATIC NET CD 05/2000 will be called the “previous configuration” in the description below.

Previous Configuration with LDB Databases

Each protocol of each module required its own database.

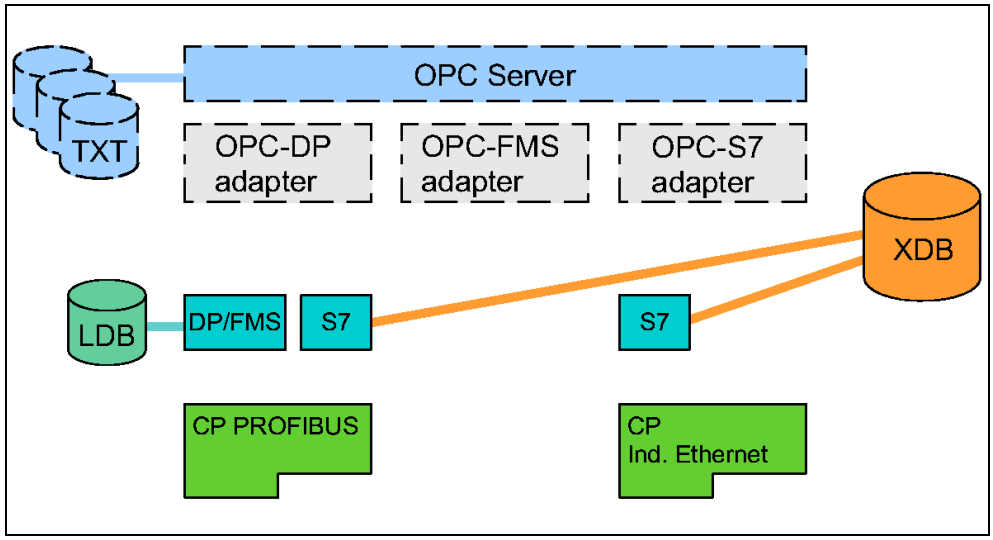
If the OPC server was used, it also required its own databases in TXT format for each protocol:



Previous Configuration with LDB and XDB Databases

Even when the entire communication of all modules for the S7 protocol was stored in the XDB database, separate databases were required for DP and FMS.

An optional OPC server also had its own data storage:



4.2.3 Configuration with Advanced PC Configuration

Description

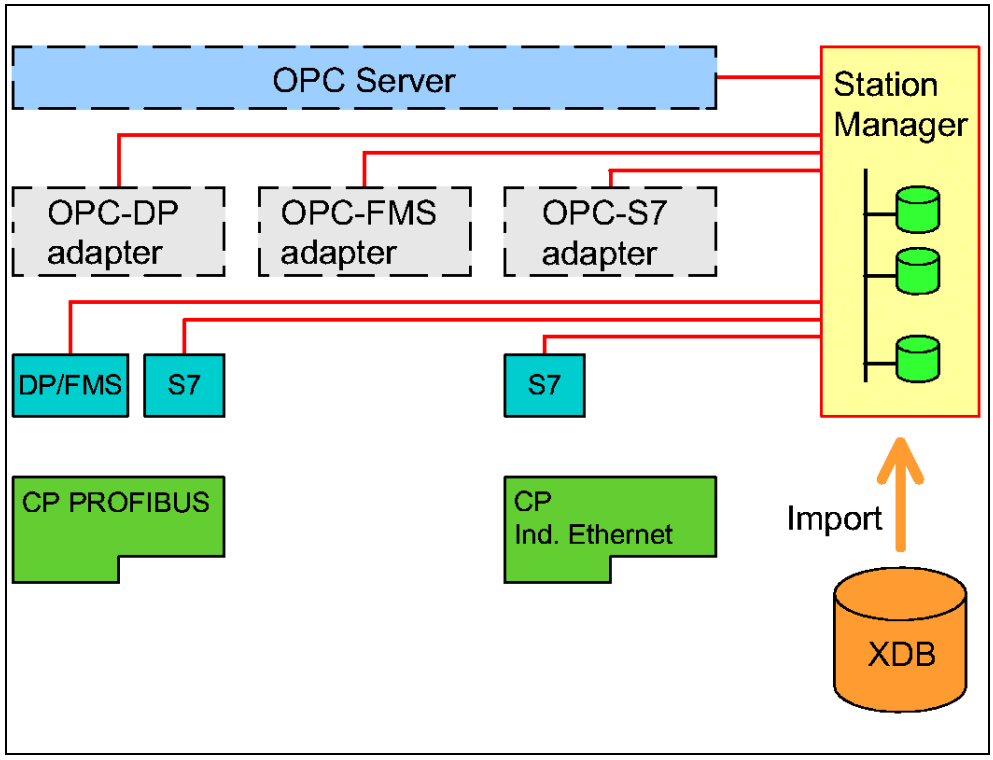
Configuration with Advanced PC Configuration means configuring with the tools of the SIMATIC NET CD Version 07/2001 or higher.

Central Data Management for all Components

The configuration information for all protocols, modules, and for OPC is all maintained in a central data management system.

The configuration data can be transferred to the central data management in different ways.

The following graphic illustrates an example of importing an XDB database created by SIMATIC NCM PC V5.1 Service Pack 2/STEP 7 Version 5.1 Service Pack 2.



4.2.4 Continued Use of Previous Configurations

Continued Use of Databases and Configuration Tools

The following table shows an overview of the previous database types and the corresponding configurations and indicates whether continued use is possible:

Protocol	Database Type	Configuration Tool	Continued Use
DP	LDB	COM PROFIBUS	Continued use not possible, the configuration must be recreated with SIMATIC NCM PC V5.1 Service Pack 2 or STEP 7 Version 5.1 Service Pack 2 or higher.
FDL	TXT	Text Editor	Continued use not possible, the configuration must be recreated with SIMATIC NCM PC V5.1 Service Pack 2 or STEP 7 Version 5.1 Service Pack 2 or higher.
FMS	LDB	COM PROFIBUS	Continued use not possible, the configuration must be recreated with SIMATIC NCM PC V5.1 Service Pack 2 or STEP 7 Version 5.1 Service Pack 2 or higher.
S7	LDB	COML S7	Continued use not possible, the configuration must be recreated with SIMATIC NCM PC V5.1 Service Pack 2 or STEP 7 Version 5.1 Service Pack 2 or higher.
S7	XDB	STEP 7	Continued use possible, the XDB database must be imported.
SEND/ RECEIVE	TXT	Text Editor	Continued use not possible, the configuration must be recreated with SIMATIC NCM PC V5.1 Service Pack 2 or STEP 7 Version 5.1 Service Pack 2 or higher.
TF	LDB	COML TF	Continued use possible, as previously with COML TF.

Note

If you want to continue using the previous configuration tools, use the SIMATIC NET CD 05/2000.

4.3 Industrial Ethernet - Effects on Older Product Versions (SIMATIC NET CD 05/2000 and earlier)

Introduction

This section describes what changes are necessary in Industrial Ethernet systems if you are already using a SIMATIC NET CD 05/2000 product or a previous version.

PG-1413, S7-1413, TF-1413 up to version 5.2 with Service Pack 2 for Windows NT 4.0 or Windows 98

Situation:
These products are not supported by the SIMATIC NET CD 07/2001.

Simultaneous installation of these products with products of the new CD 07/2001 is not permitted and is prevented.

Steps to take:
Keep using the products of the SIMATIC NET 5/2000 CD if you want to use a CP 1413 in your computer or replace it with a CP 1613.

PG-1613 up to version 2.1 for Windows 2000 Pro or Windows NT 4.0

Situation:
PG operation possible as before.

Steps to take:
None necessary

S7-1613 up to version 2.1 for Windows 2000 Pro or Windows NT 4.0

Situation:
An S7 configuration created with the COML S7 program cannot be used.

Steps to take:
A configuration created with the COML S7 program must be recreated with SIMATIC NCM PC V5.1 Service Pack 2 or STEP 7 Version 5.1 Service Pack 2 or higher.

If the configuration was already created with STEP 7 (XDB), this STEP 7 project can continue to be used. You only need to download the configuration to the CP/PC station from STEP 7 Version 5.1 Service Pack 2 or higher.

TF-1613 up to version 2.1 for Windows 2000 Pro or Windows NT 4.0

Situation:
Application associations will continue to be configured as previously with the COML TF program.

Support of this protocol by SIMATIC NCM PC or STEP 7 with OPC is not planned.

The SEND/RECEIVE programming interface included in the product TF-1613 can continue to be used unchanged. If you use the OPC interface, it will be possible, in future, to configure SEND/RECEIVE communication with SIMATIC NCM PC or STEP 7!

Steps to take:
None necessary

SOFTNET-PG up to version 3.3 for Windows 2000 Pro, Windows NT 4.0 or Windows 98

Situation:
Windows 98 is no longer supported.

PG operation under Windows 2000 Pro or Windows NT 4.0 remains possible and is unchanged.

Steps to take:
Under Windows 98, use the SIMATIC NET CD 05/2000.

SOFTNET-PG up to version 3.3 with Service Pack 2 for Windows 2000 Pro, Windows NT 4.0, Windows Me or Windows 98

Situation:
Windows Me and Windows 98 are no longer supported.

PG operation under Windows 2000 Pro or Windows NT 4.0 remains possible and is unchanged.

Steps to take:
Under Windows Me or Windows 98, use the SIMATIC NET CD 05/2000.

SOFTNET-S7 up to version 3.3 for Windows 2000 Pro, Windows NT 4.0 or Windows 98

Situation:
Windows 98 is no longer supported.

An S7 configuration created with the COML S7 program cannot be used.

Steps to take:
Under Windows 98, use the SIMATIC NET CD 05/2000.

A configuration created with the COML S7 program must be recreated with SIMATIC NCM PC V5.1 Service Pack 2 or STEP 7 Version 5.1 Service Pack 2 or higher.

If the configuration was already created with STEP 7 (XDB), this STEP 7 project can continue to be used. You only need to download the configuration to the CP/PC station from STEP 7 Version 5.1 Service Pack 2 or higher.

4.4 PROFIBUS - Effects on Older Product Versions (SIMATIC NET-CD 05/2000 and earlier)

Introduction

This section describes what changes are necessary in PROFIBUS systems if you are already using a SIMATIC NET CD 05/2000 product (or a previous version).

DP-5412, FMS-5412, PG-5412, S7-5412 up to version 5.2 with Service Pack 2 for Windows NT 4.0 or Windows 98

Situation:
These products are not supported by the SIMATIC NET CD 07/2001.

Simultaneous installation of these products with products of the new CD 07/2001 is not permitted and is prevented.

Steps to take:
Keep using the products of the SIMATIC NET 05/2000 CD if you want to use a CP 5412 in your computer or replace it with a CP 5613.

DP 5613 up to version 2.1 for Windows 2000 Pro or Windows NT 4.0

Situation:
A DP configuration created with the COM PROFIBUS program cannot be used.

Steps to take:
A DP configuration created with the COM PROFIBUS program must be recreated with SIMATIC NCM PC V5.1 Service Pack 2 or STEP 7 Version 5.1 Service Pack 2 or higher.

If the configuration was already created with STEP 7, this STEP 7 project can continue to be used. You only need to download the configuration to the CP/PC station from STEP 7 Version 5.1 Service Pack 2 or higher.

FMS-5613 up to version 2.1 for Windows 2000 Pro or Windows NT 4.0

Situation:
An FMS configuration created with the COM PROFIBUS program cannot be used.

Steps to take:
An FMS configuration created with the COM PROFIBUS program must be recreated with SIMATIC NCM PC V5.1 Service Pack 2 or STEP 7 Version 5.1 Service Pack 2 or higher.

S7-5613 up to version 2.1 for Windows 2000 Pro or Windows NT 4.0

Situation:
An S7 configuration created with the COML S7 program cannot be used.

Steps to take:
A configuration created with the COML S7 program must be recreated with SIMATIC NCM PC V5.1 Service Pack 2 or STEP 7 Version 5.1 Service Pack 2 or higher.

If the configuration was already created with STEP 7 (XDB), this STEP 7 project can continue to be used. You only need to download the configuration to the CP/PC station from STEP 7 Version 5.1 Service Pack 2 or higher.

SOFTNET-DP up to version 5.3 for Windows 2000 Pro, Windows NT 4.0 or Windows 98

Situation:
Windows 98 is no longer supported.

A DP configuration created with the COM PROFIBUS program cannot be used.

It will be possible to configure Send/Receive communication on the basis of the FDL interface over OPC with SIMATIC NCM PC or STEP 7 in the future!

Steps to take:
Under Windows 98, use the SIMATIC NET CD 05/2000.

A DP configuration created with the COM PROFIBUS program must be recreated with SIMATIC NCM PC V5.1 Service Pack 2 or STEP 7 Version 5.1 Service Pack 2 or higher.

If the configuration was already created with STEP 7, this STEP 7 project can continue to be used. You only need to download the configuration to the CP/PC station from STEP 7 Version 5.1 Service Pack 2 or higher.

SOFTNET-DP slave up to version 1.2 for Windows 2000 Pro, Windows NT 4.0 or Windows 98

Situation:
Windows 98 is no longer supported.

Steps to take:
Under Windows 98, use the SIMATIC NET CD 05/2000.

SOFTNET-S7 up to version 5.3 for Windows 2000 Pro, Windows NT 4.0 or Windows 98

Situation:
Windows 98 is no longer supported.

An S7 configuration created with the COML S7 program cannot be used.

Steps to take:
Under Windows 98, use the SIMATIC NET CD 05/2000.

A configuration created with the COML S7 program must be recreated with SIMATIC NCM PC V5.1 Service Pack 2 or STEP 7 Version 5.1 Service Pack 2 or higher.

If the configuration was already created with STEP 7 (XDB), this STEP 7 project can continue to be used. You only need to download the configuration to the CP/PC station from STEP 7 Version 5.1 Service Pack 2 or higher.

SIEMENS

Configuring PC Stations with SIMATIC NCM PC

Manual and Quick Start

for SIMATIC NCM PC / STEP 7 V5.1 SP2 and higher



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Release 01

Classification of the Safety-Related Notices

This manual contains notices which you should observe to ensure your own personal safety, as well as to protect the product and connected equipment. These notices are highlighted in the manual by a warning triangle and are marked as follows according to the level of danger:



Danger

indicates that death, severe personal injury or substantial property damage **will** result if proper precautions are not taken.



Warning

indicates that death, severe personal injury or substantial property damage **can** result if proper precautions are not taken.



Caution

indicates that minor personal injury or property damage can result if proper precautions are not taken.

Vorsicht

indicates that property damage can result if proper precautions are not taken.

Notice

highlights important information on the product, using the product, or part of the documentation that is of particular importance and that can have detrimental results if ignored.

Note

highlights important information on the product, using the product, or part of the documentation that is of particular importance and that will be of benefit to the user.

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Safety Instructions Regarding your Product:

Before you use the product described here, read the safety instructions below thoroughly.

Qualified Personnel

Only **qualified personnel** should be allowed to install and work on this equipment. Qualified persons are defined as persons who are authorized to commission, to ground, and to tag circuits, equipment, and systems in accordance with established safety practices and standards.

Correct Usage of Hardware Products

Note the following



Warning

This device and its components may only be used for the applications described in the catalog or the technical description, and only in connection with devices or components from other manufacturers which have been approved or recommended by Siemens.

This product can only function correctly and safely if it is transported, stored, set up, and installed correctly, and operated and maintained as recommended.

Before you use the supplied sample programs or programs you have written yourself, make certain that no injury to persons nor damage to equipment can result in your plant or process.

EU Directive: Do not start up until you have established that the machine on which you intend to run this component complies with the directive 89/392/EEC.

Correct Usage of Software Products

Note the following



Warning

This software may only be used for the applications described in the catalog or the technical description, and only in connection with software products, devices, or components from other manufacturers which have been approved or recommended by Siemens.

Before you use the supplied sample programs or programs you have written yourself, make certain that no injury to persons nor damage to equipment can result in your plant or process.

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Disclaimer of Liability

We have checked the contents of this manual for agreement with the hardware and software described. Since deviations cannot be precluded entirely, we cannot guarantee full agreement. However, the data in this manual are reviewed regularly and any necessary corrections included in subsequent editions. Suggestions for improvement are welcomed.

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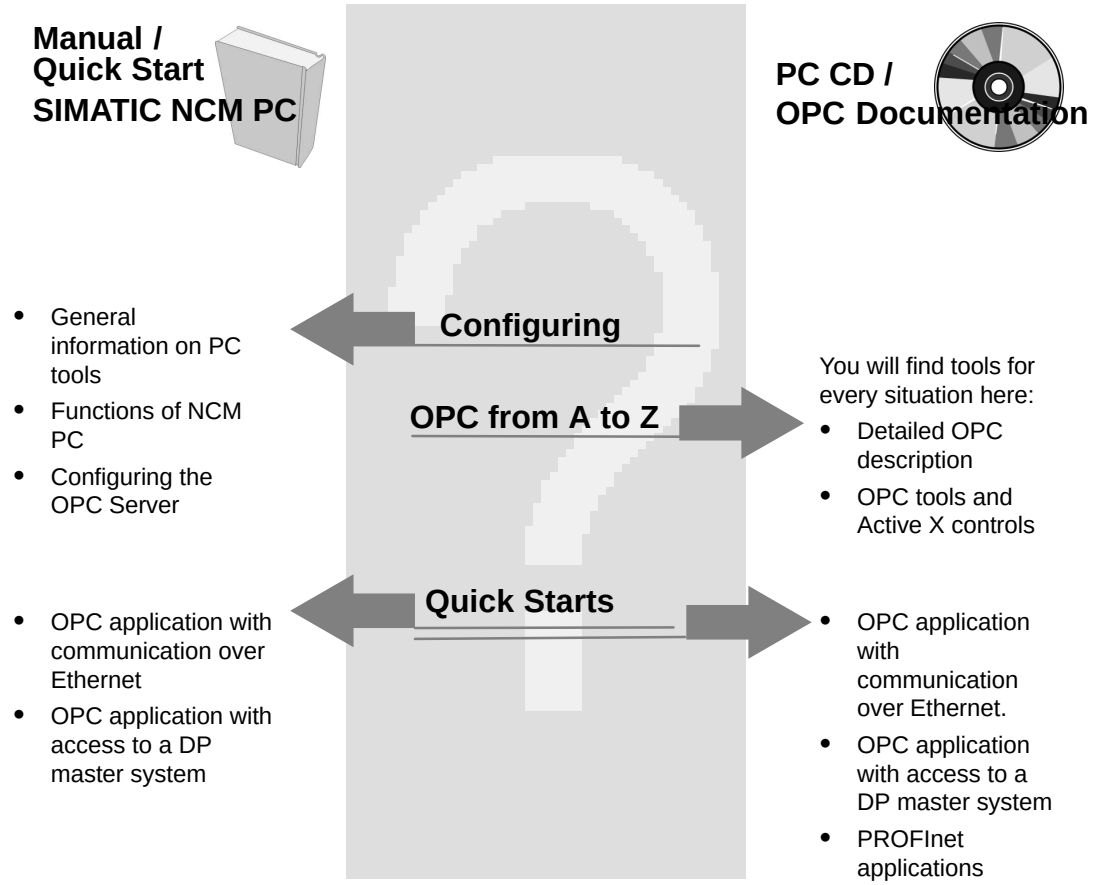
Subject to technical change.

This manual...

... supports you and helps you to make efficient use of the communications functions of your PC applications in conjunction with the SIMATIC NET modules.

... supplements the OPC documentation on the SIMATIC NET PC / Windows CD.

The descriptions are structured as shown below:



Additional Information

This manual is also part of the documentation packages for NCM S7 for PROFIBUS and Industrial Ethernet.



Tip:

This symbol appears in the margin to draw your attention to useful tips.

Additional Information on SIMATIC S7 and STEP 7

The following documentation contains additional information about the STEP 7 standard software of the SIMATIC programmable controllers and can be obtained from your local Siemens office.

Topic	Document
Basic information for technical personnel using the STEP 7 standard software for control tasks with S7–300/400 programmable controllers.	STEP 7 basics with • User Manual • Programming Manual • Manual for converting from S5 to S7 • Primer for a fast start

Validity of this Manual

The information in this manual applies to

- Version 5.1 SP2 and higher of the SIMATIC NCM PC / STEP 7 configuration software with the NCM S7 for Industrial Ethernet / PROFIBUS options;
- CD 7/2001 and higher from SIMATIC NET

Conventions

References to other manuals and documentation are indicated by numbers in slashes /.../. These numbers refer to the titles of manuals listed in the References section of the Appendix.

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1 Introduction and Notes on Switching to Advanced PC Configuration

Advanced PC Configuration is the new tool with which you can commission a PC station as part of an industrial communication network. SIMATIC NET supports the option of using Advanced PC Configuration on a central engineering station to configure not only PC stations but also, for example, operator stations. The engineering station is a networked PC with the SIMATIC NCM PC program or STEP 7.

Tools of Advanced PC Configuration

- Commissioning Wizard

  The Commissioning Wizard allows simple and consistent commissioning of all modules and user programs supported by Advanced PC Configuration. It guides the user step by step through the installation and configuration of the PC station.

- Configuration Console

  The Configuration Console is a snap–in program embedded in the Microsoft Management Console (MMC) and provides a wide range of options for configuring PC hardware components and PC user programs as well as providing diagnostic functions. Settings for the OPC servers that ship with the communication software are also made in the Configuration Console.

- SIMATIC NCM PC and PC Station Wizard

  With SIMATIC NCM PC V5.1, Service Pack 2, a new configuration tool for STEP 7–compatible PC configuration is available.

- Station Configuration Editor

  The Station Configuration Editor is the user interface of the Station Manager; this allows you access to the component management of the PC station.

The following Chapter LEERER MERKER also contains information on these tools and other related utilities.

Features – Comparison with Previous Products

The new features of the SIMATIC NET software involve several changes to the previous configuration procedures and these are summarized below:

- All settings are made with **one** tool during configuration and downloaded completely to the PC station. This tool is SIMATIC NCM PC or STEP 7.
- Properties that were previously configured using the ”Set PG/PC Interface” program are now part of the configuration and are downloaded to the PC station. These include, for example, the station address and the bus parameters. It is no longer necessary to create several databases.
- Properties that were previously specified in various configuration programs are now configured in SIMATIC NCM PC / STEP 7. Examples of such configuration tools include COML S7, COM PROFIBUS.
- Configuration parameters for the OPC Server that were previously stored in TXT files are now configured in SIMATIC NCM PC / STEP 7 and downloaded to the PC station.

LDB Databases no Longer Required

By configuring on a central station and with the option of downloading, LDB databases are no longer required for the DP, FMS, and S7 protocols. Existing XDB files can continue to be used; they must be imported into the central data management on the PC station using the Station Configuration Editor or PC Station Wizard.

Note

For more detailed information on the difference between the previous methods and working with the software and modules, refer to the CD documentation and the Installation Instructions of the SIMATIC NET PC software products.

❑

2 Configuring SIMATIC PC Stations

Communication with PC Applications

PC applications that communicate with each other or with other stations such as S7 stations, PC stations, or operator control and monitoring stations use SIMATIC NET communications modules and software components.

Before such communication is possible, you must first set up the communication services on your PC.

This chapter explains how to use the tools and utilities with which you set up the PC components for communications tasks.

2.1 Tools and Utilities

SIMATIC NCM PC Configuration Tool

SIMATIC NCM PC is the central tool for configuring the communications services for your PC station. After creating your configuration data with this tool, you then download it to the PC station. The PC station is then ready for communication.

Note

You can configure both in SIMATIC NCM PC and in STEP 7. STEP 7 also provides all the SIMATIC NCM PC functions described here for configuring your PC.

From now on, the description will only refer to SIMATIC NCM PC but nevertheless applies to both.

Station Manager with the Station Configuration Editor

With the Station Configuration Editor, you can both display and edit the list in which the components are managed in the Station Manager on a PC station.

The Station Configuration Editor also provides diagnostic services.

Wizards Mean Less Work

The following wizards can be used in most situations.

- Commissioning Wizard

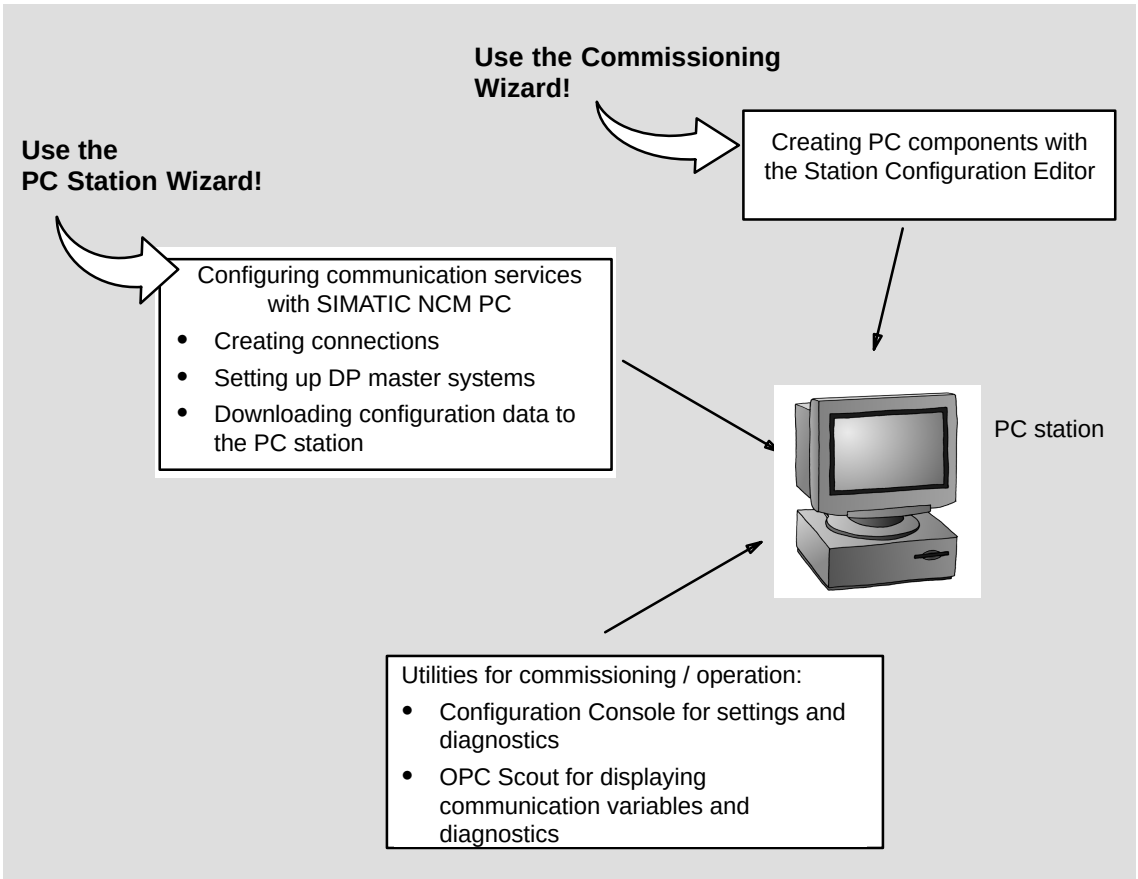
  A Commissioning Wizard helps you to integrate a newly installed communications module in a few simple steps so that subsequent configuration with the PC Station Wizard and the SIMATIC NCM PC configuration tool is normally extremely simple. The existing configuration of the PC can be queried automatically; you do not need to call up the Station Configuration Editor explicitly.

- PC Station Wizard

  The PC Station Wizard helps you when creating and handling projects for the SIMATIC NCM PC configuration tool. You can call it up either directly or start it when using the Commissioning Wizard.

The following graphic shows the steps required and which tools to use.

When you use the wizards, you are guided through these steps automatically and can assume that the configuration data created in SIMATIC NCM PC are consistent with the PC configuration.



Further Utilities

From the graphic, you can see that there are other utilities available, for example for using the OPC Server interface. These utilities will be pointed out or described in greater detail where applicable.

- Configuration Console

  A utility with which you can display the structure of a PC station in much the same way as in the Windows Explorer. The interactive options are

  – Module diagnostics

  – Setting the operating mode

  – Configuration for specific situations

- OPC Scout

  A utility that allows easy access to process data over the OPC interface. The interactive options are

  – Displays of the configured communications channels representing the available OPC variables

  – Monitoring, reading, and writing of process data

2.2 Using tools – Station Configuration Options

Depending on where you install the configuration tool and how the PC station is networked, you have the following options:

- Online – networked (remote PC station)
- Online – local
- Offline

The following descriptions illustrate when and where to use the tools and utilities in various situations.

Online – Networked (Configuration Station and PC Station Networked)

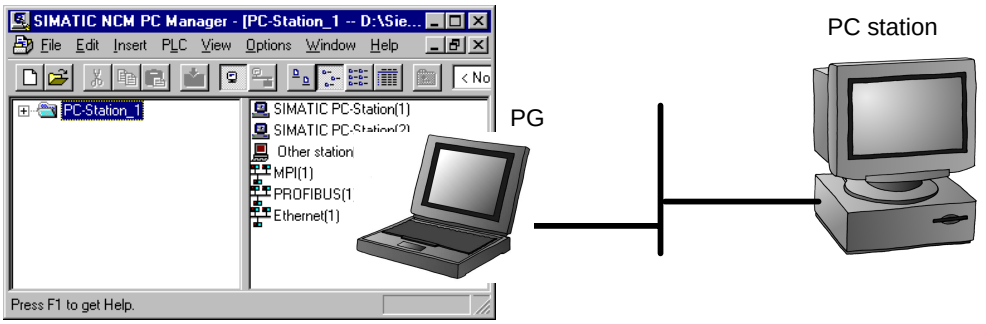


Table 2-1

Tool / Utility	...use on	
	Configuration Station	**Networked PC Station**
SIMATIC NCM PC / STEP 7 is installed	yes	no
Station Configuration Editor	no	optional • can be used to adapt a target PC station to a configuration
Commissioning Wizard	optional • for setting up PG /PC operation	recommended • for setting up modules for productive communication
PC Station Wizard	recommended • to edit a stored configuration • to create a new configuration	no

Online – Local (Configuration Station is also PC Station)

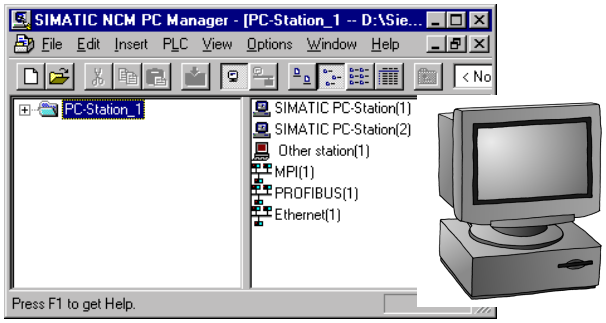


Table 2-2

Tool / Utility	...use on
	Configuration Station = PC Station
SIMATIC NCM PC / STEP 7 is installed	yes
Station Configuration Editor	optional • can be used to adapt the PC station to a configuration
Commissioning Wizard	recommended • for setting up modules for productive communication
PC Station Wizard	recommended to ... • change local settings • edit a stored configuration • create a new configuration • import XDB files

Offline (Configuration Station and PC Station not Connected)

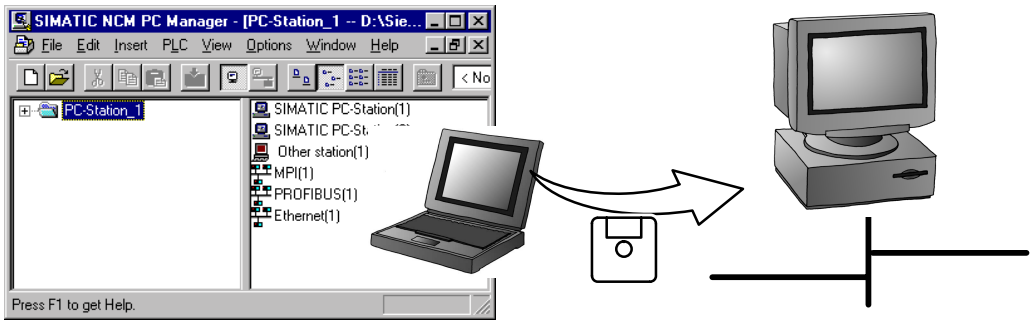


Table 2-3

Tool / Utility	...use on	
	Configuration Station	**Networked PC Station**
SIMATIC NCM PC / STEP 7 is installed	yes	no
Station Configuration Editor	no	yes • to import an XDB file optional • can be used to match the actual configuration of a PC station to a planned configuration
Commissioning Wizard	no	recommended • for setting up modules for productive communication
PC Station Wizard	recommended • to edit a stored configuration • to create a new configuration	recommended • to import an XDB file

2.3 Configuring with SIMATIC NCM PC

This chapter will familiarize you with the basic functions of SIMATIC NCM PC.

What the NCM PC Configuration Tool Does

The SIMATIC NCM PC Manager is a version of STEP 7 tailored for configuring PCs. It provides the functionality with which you can perform the following tasks for PC stations:

- Configure communication properties of the SIMATIC NET OPC Server
- Configure connections
- Configure the DP mode
- Set network parameters for PROFIBUS and Ethernet operation
- Download configuration data to PC stations
- Monitor communication to attached S7 stations with NCM Diagnostics

Further Information in Help

You will also find detailed information in the integrated help by selecting the menu command:

- Help ▸ Introduction

  Contains a brief description of SIMATIC NCM PC

- Help ▸ Getting Started

  Here you will find brief instructions on how to create a PC station, its applications and modules. For more detailed information, you can go from here to the PC topics in the main help system.

  These instructions are available only in Help on SIMATIC NCM PC. In STEP 7, select the Help menu directly:

- Help

  Here you will find help topics relating to the PC station under:

  – Configuring Hardware / SIMATIC PC Station

  – Configuring Connections for a SIMATIC PC Station

2.3.1 Relationship Between SIMATIC NCM PC and STEP 7

SIMATIC NCM PC and STEP 7 are compatible with each other.

You can

- open and edit projects that you created with SIMATIC NCM PC at any time in STEP 7/SIMATIC Manager. This allows you to use additional functions for programming and configuring S7 stations.

Notice

Optional packages are not supported by SIMATIC NCM PC. If you are editing a project that was created or edited in STEP 7, it may contain components from STEP 7 optional packages. If this is the case, you can only edit stations using SIMATIC NET PC that do not contain components from STEP 7 optional packages.

- open and edit projects you created with STEP 7/SIMATIC Manager at any time in SIMATIC NCM. You can edit PC stations you have already created and create new PC stations. You can configure communication connections from these PC stations to existing S7 stations.

The restrictions in SIMATIC NCM PC relate to the S7 station types that can be configured and programming. You can see the differences in the following graphic:

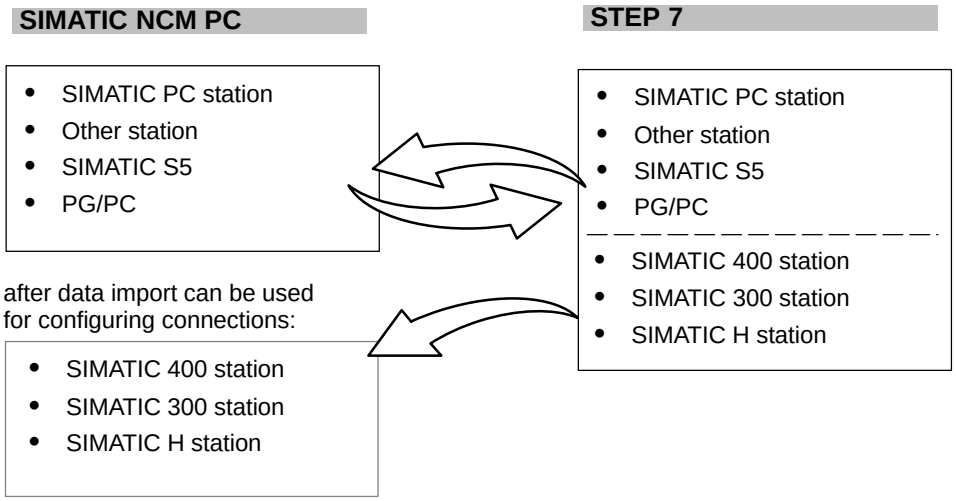


Figure 2-1

The types of stations that you can configure only in STEP 7 can be used in SIMATIC NCM PC as target stations for a connection configuration after importing the project.

After working on such a project in SIMATIC NCM PC, you can return it to STEP 7 and edit it again at any time.

2.3.2 Creating a PC Station

Aims

You want to create configuration data for communication services for individual PC stations. This configuration data will then be downloaded to the PC station. After this, the PC applications can use the communications services.

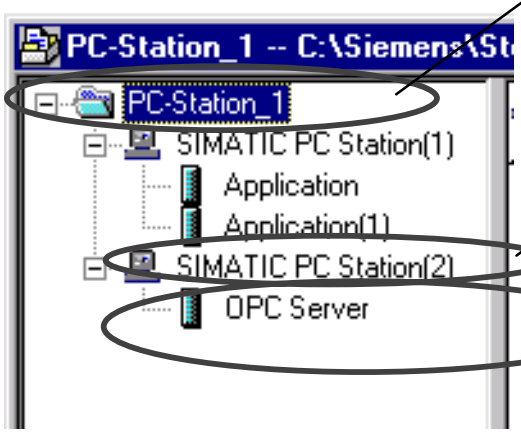


Tip:

Remember that you can create a great deal of the project structure automatically using the PC Station Wizard! Read the information on starting and working with the wizard in Section 2.6. You will find examples in the Quick Start in Chapters 4 and 5.

Creating and Managing Objects

After starting SIMATIC NCM PC, you either open an existing project or create a new one. You use projects to manage your configurations consisting of all or part of the stations of your plant.



Objects are arranged in a hierarchical structure within a project.

For each PC station, you create a separate object of the type “PC station”.

These objects in turn contain the configuration and parameter data of the hardware and software. These objects are then used to assign the communications services.

The objects are created with HW Config as shown in Section 2.3.3.

Notice

The name selected here for the PC station identifies the PC configuration.

If you define a configuration for the local PC with NCM PC, the name you select must be identical to the name of the actual local configuration. If you define a configuration for a remote PC station, the name must not be identical to that of the actual local configuration! Otherwise, the local configuration would be overwritten when you download.

Follow the steps below:

1. Start up the SIMATIC NCM PC Manager.
2. You can create the stations with the insert objects function.
3. Opening a station object starts the HW Config tool with which you can create the configuration of a PC station consisting of modules and applications (see the following page).

Note

When you start STEP 7, a wizard is opened that helps you to create a new project.

In SIMATIC NCM PC, this wizard is replaced by the PC Station Wizard. Depending on your initial situation, this wizard provides you with more extensive support for your PC station.

The PC Station Wizard also exists in STEP 7.

2.3.3 Configuring a PC Station with HW Config

Creating an Image of the PC Configuration

To allow the configuration data sent by the configuration system to be assigned to a module or an application, they must have unique identification numbers. The identification number for modules, applications, and other components in a PC station is the index.

You now place your applications and modules in slots in a “virtual rack” in HW Config. This slot number then corresponds to the index mentioned above.

Notice

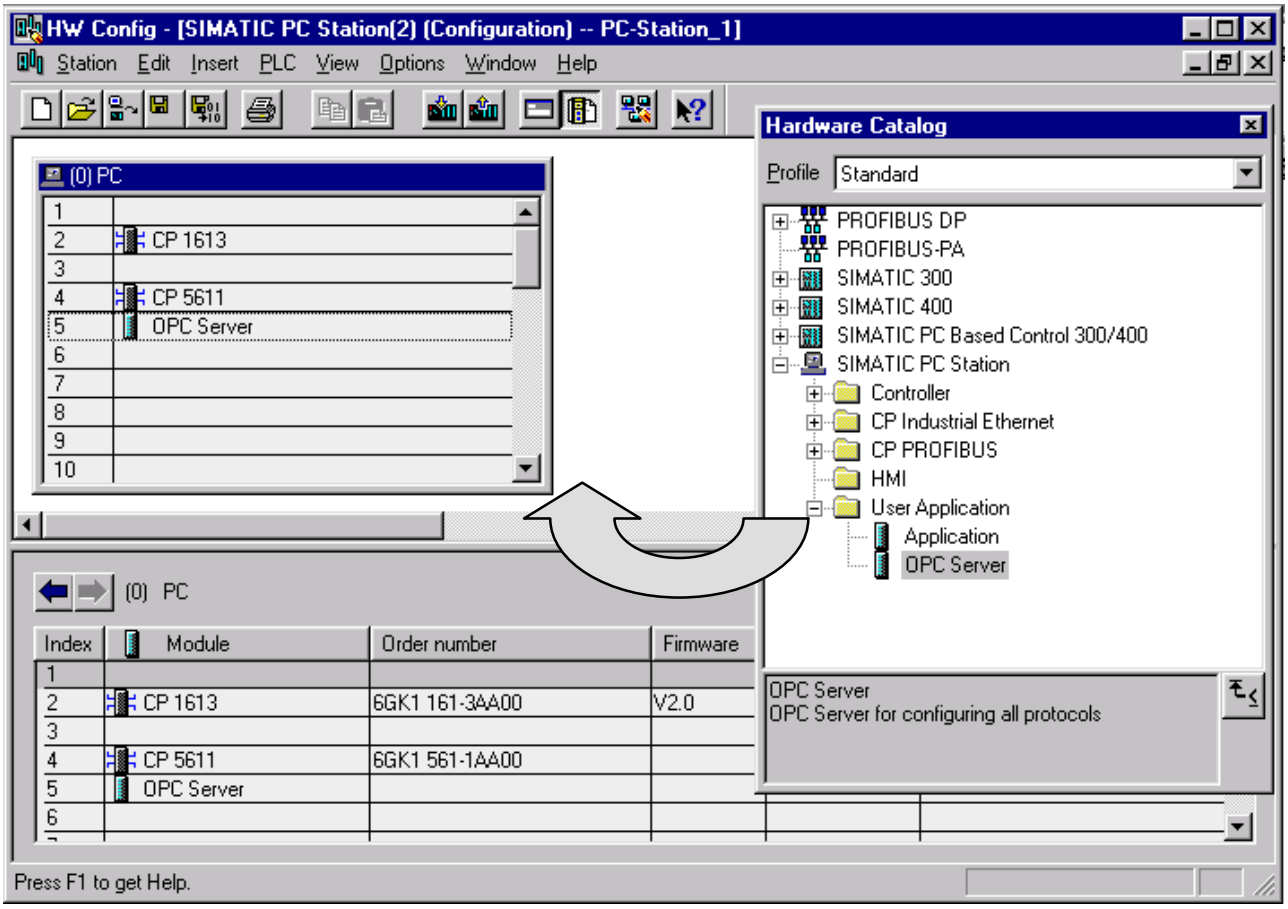
Be careful not to confuse this “Index” with a hardware slot, for example on the PCI bus of the PC station. The slot on the PCI bus is not relevant for commissioning and is not used at any point.

Follow the steps below:

Drag the components from the catalog to the list (the “virtual rack”) displayed in HW Config.

Notice

Make sure you arrange the components exactly the same as in the configuration list of the Station Configuration Editor (see Section 2.7). If the configuration differs from the list, the configuration data that you download from SIMATIC NCM PC to the PC station will no be adopted correctly.



PC Components in the Catalog

For the SIMATIC PC station, you can select the following components:

- **Application**
  - Application (standard application)

    You use standard interfaces to communicate with other applications and devices via your PC module.

    The user programs included in the application use suitable interfaces for communication, such as the SAPI programming interface or the SEND/RECEIVE programming interface.

    You can configure the following communications services depending on the module inserted:

    – S7 connections

    – FMS connections (PROFIBUS)

    – DP services (DPV0 and DPV1)

    Note how these differ from the user programs that use the communication service as OPC clients via an OPC Server as described below.

– OPC Server

You use the convenient interface to an OPC server to communicate with a programmable controller such as a SIMATIC S7-400.

The OPC server can be set up as an interface for all available communications protocols. You can only create this object once in a PC station.

You can then use this OPC Server for communication with any number of user programs (OPC clients).

The following communications services can be used depending on the modules inserted:

– all types of connection

– DP services

- **CP Industrial Ethernet**

  This contains all the CP modules for attachment to Industrial Ethernet.

- **CP PROFIBUS**

  This contains all the CP modules for attachment to PROFIBUS.

2.3.4 Creating a DP Master System

Read the information below if you want to use a PROFIBUS CP and configure a DP master system.

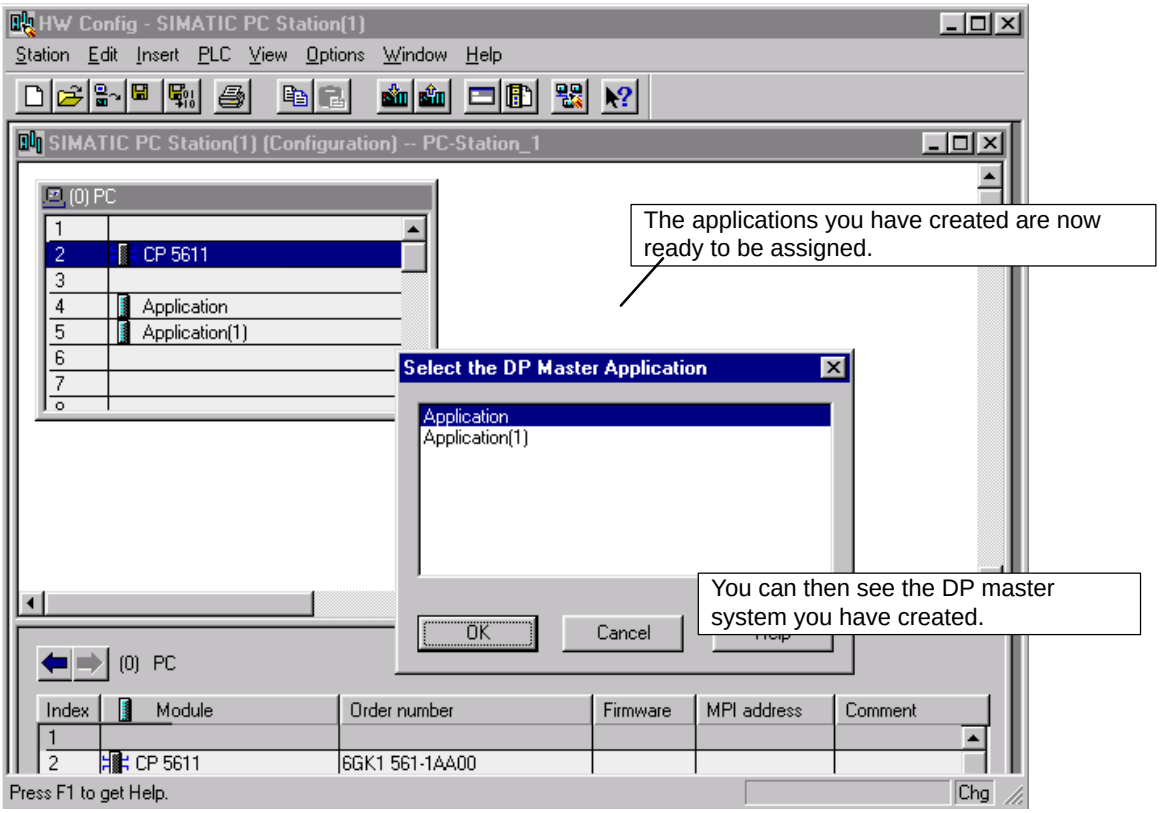
Significance of the Configuration Data in a DP Master System

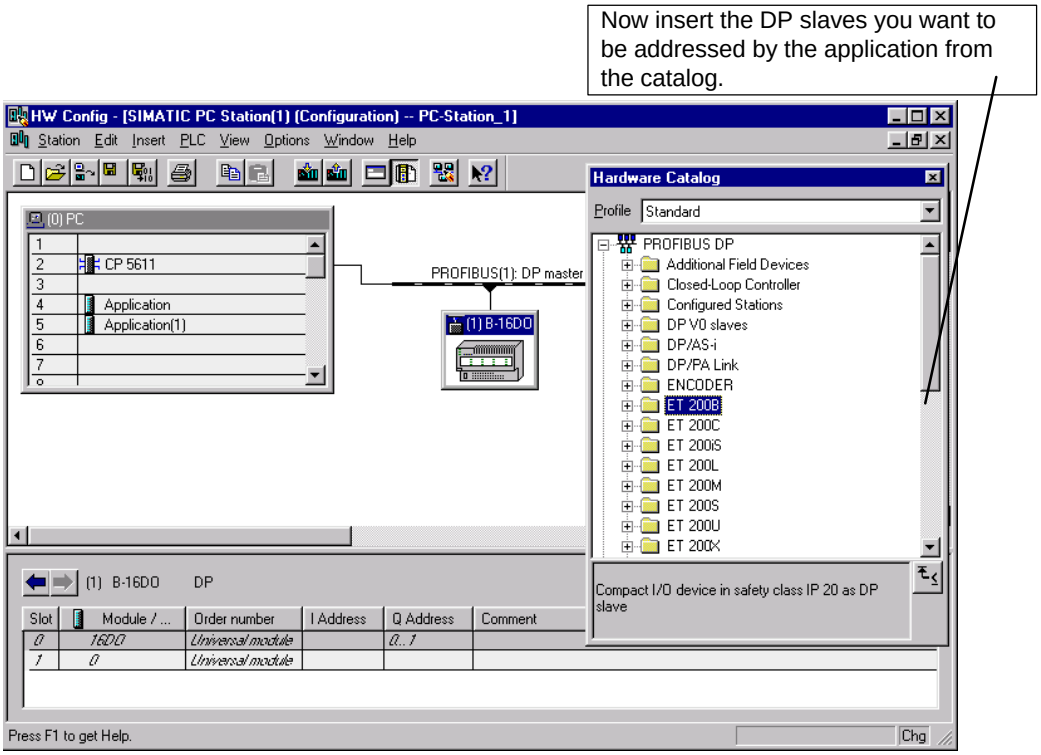
The configuration data inform the DP master in the PC station of the data and address areas of the attached slaves.

Depending on the type of slave, this information is either implicitly linked to the entry in the catalog or must be configured here additionally as, for example, when using an intelligent DP slave such as the CP 342-5.

Follow the steps below:

1. You have already placed the applications and modules as described in Section 2.3.3.
2. After you have taken the module from the catalog, you can select it and create a DP master system using the **Insert** menu command.
3. Select the application that will address the master system (the DP slaves).




Now insert the DP slaves you want to be addressed by the application from the catalog.
HW Config - [SIMATIC PC Station(1) (Configuration) -- PC-Station_1]
Station Edit Insert PLC View Options Window Help
(0) PC
1
2 CP 5611
3
4 Application
5 Application(1)
6
7
8
PROFIBUS(1): DP master
(1) B-16DO
Hardware Catalog
Profile Standard
PROFIBUS DP
Additional Field Devices
Closed-Loop Controller
Configured Stations
DP V0 slaves
DP/AS-i
DP/PA Link
ENCODER
ET 200B
ET 200C
ET 200iS
ET 200L
ET 200M
ET 200S
ET 200U
ET 200X
Compact I/O device in safety class IP 20 as DP slave
(1) B-16DO DP
Slot Module / ... Order number I Address Q Address Comment
0 16DO Universal module 0...1
1 0 Universal module
Press F1 to get Help.
Chg

2.3.5 Configuring Connections

Meaning

During operation, configured connections are established either implicitly or on request, depending on the parameter assignment. They are then available to the OPC Server or the PC application for communication.

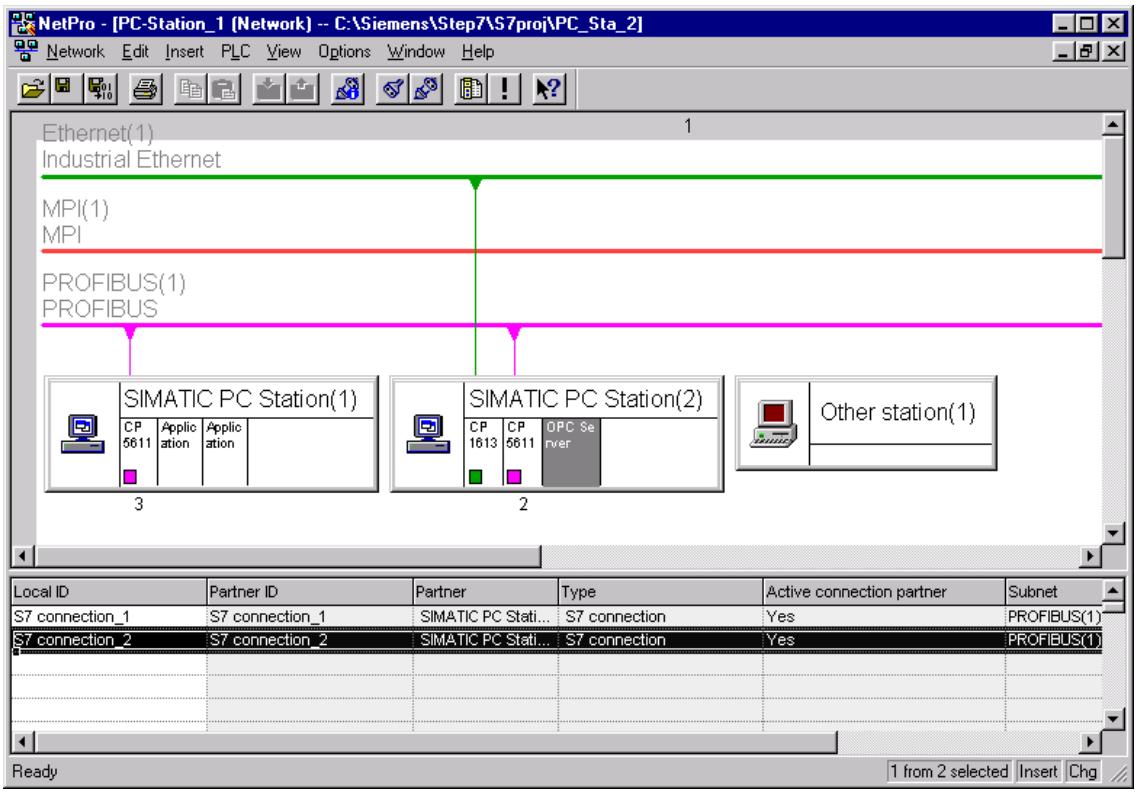
General Rules

Regardless of the type of application, these general rules apply when configuring connections:

- Communication connections are always assigned to an application.
- In the PC station, the CP that supports the type of connection is used for the data transfer.
- If there is more than one CP with this capability, you can use Routing to select the transmission path.

Follow the steps below:

1. Select the application to which you want to assign a connection.



2. Enter the desired connection type. When selecting the destination station, note the following:

   After creating a new project in SIMATIC NCM PC, you will normally find that the required destination station (for example an S7 station) does not exist. You then have the following options:

   – Create an unspecified connection

     Select “unspecified” as the connection partner. In the Properties dialog box, you can then set the address parameters for the connection partner.

   – Create a proxy object

     Create an “Other Station”. You then network this station by assigning the necessary interface types in the Properties dialog.

     This method is advisable if you intend to assign several connections to this partner station on the same interface in your project.

   – Create a copy of an S7 station

     Insert the copy of an S7 station that you have created using STEP 7 in another project. You can then select this S7 station as your destination station.

2.4 Downloading the Configuration Data to the PC Station

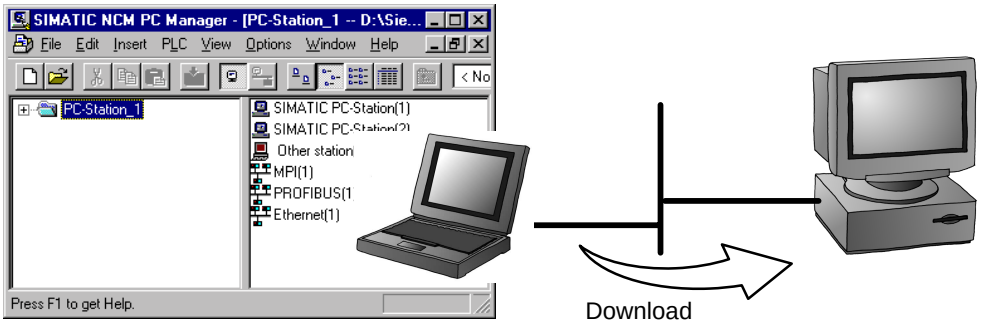
Notice

Downloading as described below only results in successful installation of the communications services on your PC station if the arrangement of the components in the configuration data is identical with that of the configuration data on the PC station. See also Section 2.3.3.

Online Mode

The online mode allows you to download the configuration data directly to a PC station attached to the network (MPI, PROFIBUS or Ethernet) or to load the data on the local PC station if you are using this as the configuration station.

- **Online – Networked (Configuration Station and PC Station Networked)**

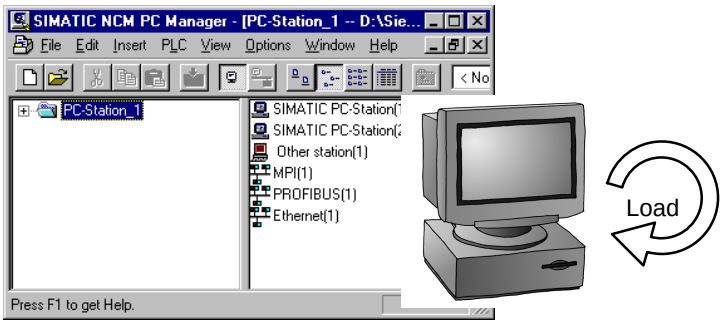


Follow the steps below:

1. Switch the PG/PC station online.
2. Select the station you want to download to.
3. Download the configuration data with PLC –> Download

   Make sure you set the correct interface in “Set PG/PC Interface”.

- **Online – Local (Configuration Station is also PC Station)**



Follow the steps below:

1. Select the station you want to load.
2. Load the configuration data using PLC –> Download.

Requirement:

In the Set PG/PC Interface, you must first select the following setting as access point of the application:

S7ONLINE (STEP7) –> PC internal (local)

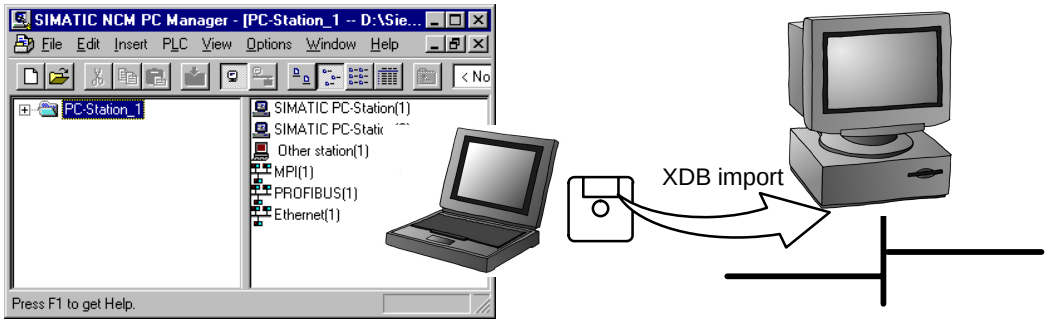


Tip:

If you use the PC Station Wizard, this setting is made automatically.

Offline (Configuration Station and PC Station are not Connected)

If you are working offline, you will require an XDB file to transfer the data. The configuration system always generates an XDB file for each configured PC station.



Follow the steps below to create and import an XDB file:

1. Select the station on which you want to load the data in the STEP 7 project.
2. Open the object properties of the station with the “Station Properties” menu command and select the “Configuration” tab.
3. Here, you can check and, if necessary, change the setting under “Storage Location of the Configuration File”.
4. Save and compile your project; you will then find the required XDB file in the folder you have selected.

   Note:

   The station name must be identical in the configuration and on the local PC station “Entry in the Station Configuration Editor”.
5. Copy the XDB file onto a data medium that the destination station can access.
6. Import the XDB file into your destination station using the Station Configuration Editor.

2.5 Commissioning Wizard

When configuring the SIMATIC NET communications modules for the first time, you are supported by the Commissioning Wizard.

The Commissioning Wizard takes you through the necessary steps for commissioning modules and the further steps for commissioning a PC station with configured communication.



Tips:

- Refer to the examples in the Quick Start chapters in this manual.
- The tools and utilities were described in Section 2.2, Station Configuration.

The wizard opens...

- when you boot the PC station after inserting an additional module
- when you select the appropriate menu command in the “Configuration Console” tool
- when you select it in the Start menu

How to Use the Wizard

The basic steps are outlined below:

1. When you first configure the modules, all those that had not been detected previously are detected. For each module, you then set the operating mode and (if you select “Configured mode”) the network–related parameters for initial configuration.
2. After the Commissioning Wizard has run through all the previously undetected modules, confirm the settings you made for the modules.
3. If you want to configure communication on the PC station, you can now start the PC Station Wizard. When you have finished configuring, you return to the Commissioning Wizard.
4. If you intend to use the OPC server, you can decide whether to create a symbol file or use an existing one in the next step.
5. After this, the configuration is finally adopted and the PC is ready for the next steps.

2.6 PC Station Wizard

The PC Station Wizard supports you when you create projects in SIMATIC NCM PC. It allows you to acquire the configure data of the PC station automatically. This helps you to make sure that your configuration data is consistent.

Tips:

- Refer to the examples in the Quick Start section, Chapters 4 and 5.
- We have already described the interaction of the tools and utilities in Section 2.2, Station Configuration.

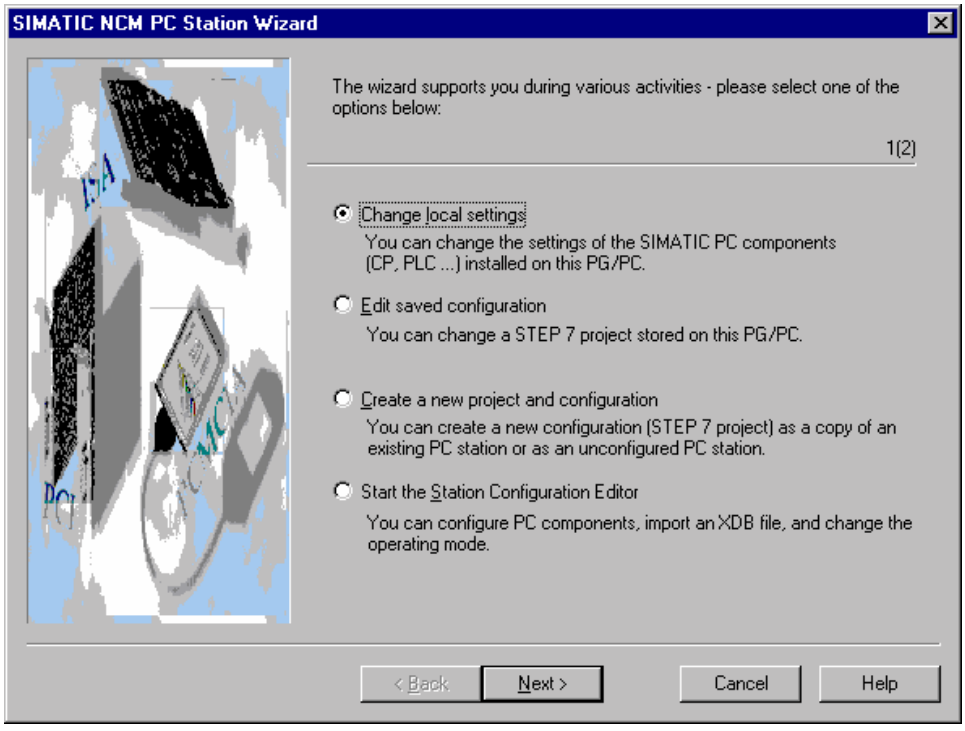
How to Start the PC Station Wizard

- From the Commissioning Wizard

  After you have finished configuring the modules, you start the wizard by clicking the corresponding button (see Section 2.5 and the Quick Start chapters).

- From the Start menu

  Select **Start ▸ SIMATIC ▸ SIMATIC NCM PC Station Wizard**.



The PC Station Wizard supports you in the following situations:

- Changing local settings

  If the SIMATIC NCM PC configuration tool is installed on the destination PC station, the wizard can compare the configuration data with the planned configuration data that already exist. The communications parameters can then be edited in the project directly.

- Editing a saved configuration

  Open an existing project and compare the local configuration with the information in the project.

  In contrast to the “Change Local Settings” function, the configuration edited here is independent of an existing local configuration.

- Creating a new configuration

  Create a new project and enter the local configuration in the project.

- Starting the Station Configuration Editor

  When working offline, this option make use of an XDB file (configuration station and PC station are not connected – see Section 2.2).

2.7 Station Configuration Editor

Purpose

The Station Configuration Editor is the central management entity for the components of the PC station.

Components are the modules and communications tasks of active applications.

The Station Configuration Editor can also be used for diagnostic purposes.

Modes

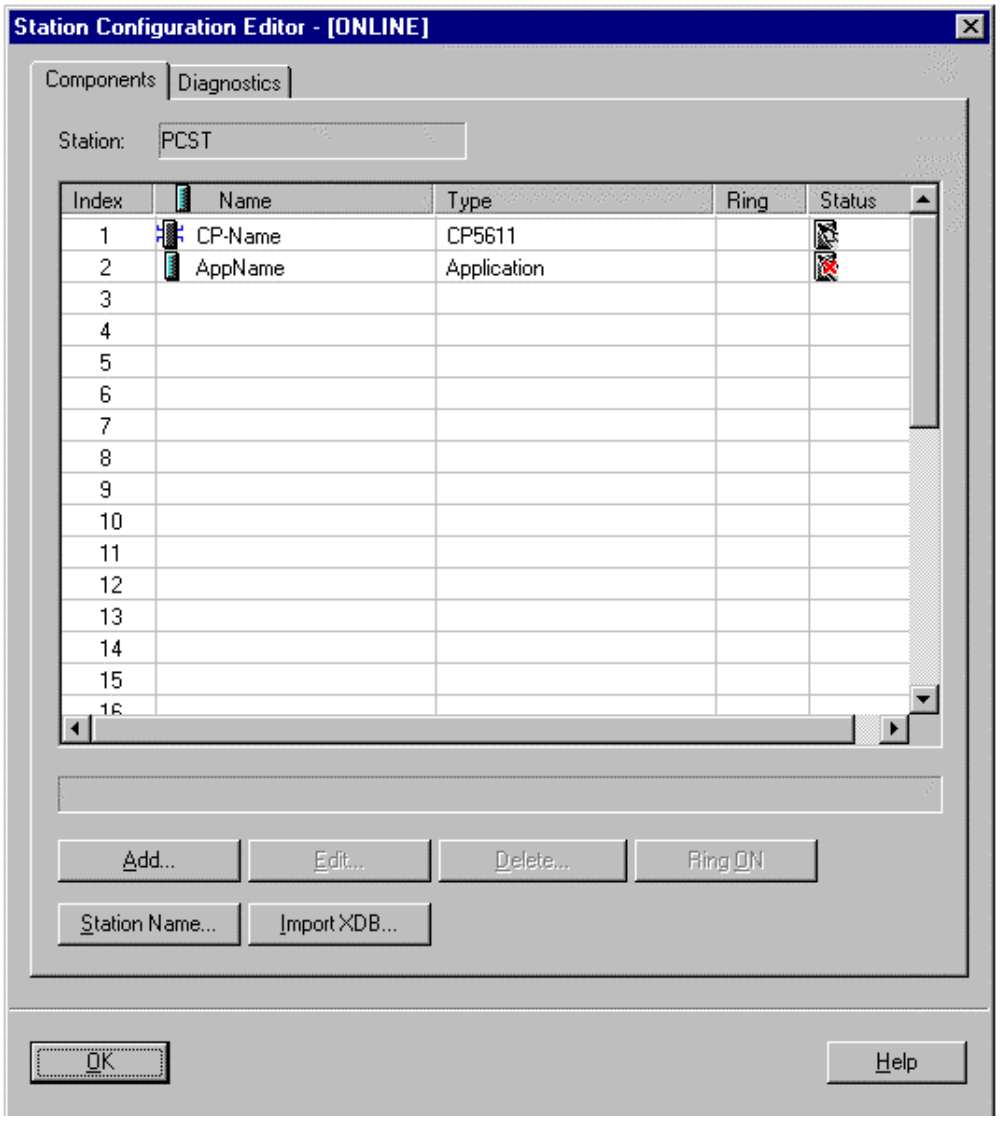
You can use the Station Configuration Editor for the local PC station or for a PC accessible over the network.

How to Start the Station Configuration Editor



The Station Configuration Editor is always available and started on the PC station on which you have installed the PC-CD. You can bring it to the foreground by clicking the icon shown here in the taskbar of the Windows desktop.

2.7.1 Managing Components: “Components Tab”



Notice

The components in the configuration list you can edit here must be entered in exactly the same order as in the component image you created in SIMATIC NCM PC with HW Config. If the configurations differ, the configuration data that you download to the PC station from SIMATIC NCM PC will not be adopted correctly.

Creating a Component Configuration

- Automatic configuration using wizards

In the simplest situation, you use the Commissioning Wizard and the PC Station Wizard to configure your PC station. In this case, the component configuration is acquired automatically. You then simply call the configuration editor described here to check the configuration or to run diagnostic checks.

- “Controlled” configuration

1. First assign a name for the station by clicking the Station button. The name must match the name you assigned to the PC station when you configured the communications with SIMATIC NCM PC.
2. If you want the PC station to be accessible on the network, select the station by clicking the Host button.
3. Create the individual components for your PC station by clicking the Add button.

The status display constantly informs you whether the component you have created matches the current hardware configuration and whether it matches any configuration that has already been downloaded.

Note

You will find more information on the meaning of the display boxes and the buttons in the integrated help system.

Importing an XDB File

The communication configuration data are either downloaded directly to the PC station or imported using an XDB file (see Section 2.4).

When required, the XDB file can be imported using the relevant button in the Station Configuration Editor.

You can only import an XDB file when the configuration is an exact match.

Checking the Accessibility of the Module – “Ring” Function

Once you have finished configuring, you can check the accessibility of the modules, by clicking the “Ring” button. If the module supports this function, you will see an indicator respond on the module.

2.7.2 “Diagnostics” Tab

How It Works

The Station Configuration Editor manages a diagnostic buffer in which the PC station components (hardware and software) enter event information.

You can use this list to analyze configuration or communication problems.

Note

You will find more information on the meaning of the display boxes and the buttons in the integrated help system.

❑

3 Configuring the OPC Server

OPC Server

With the SIMATIC NET OPC Server described here, SIMATIC NET offers you a convenient tool with which your PC applications can write and read process data and receive notification of process events.

By creating a configuration, you can specify the behavior of the OPC Server. You then download the configuration data to the PC station with NCM PC.

This chapter describes the options available to you when configuring the OPC Server with the NCM PC configuration tool.

Where to Find Further Information

- Creating PC stations and configuring connections:

  Please read Section 2.3 in this manual.

- Using the interface to the OPC Server in PC applications:

  How you address the OPC Server in your PC application and how the PC application reacts to the behavior of the OPC Server is not described in this documentation.

  For more information on this topic, please read the detailed OPC documentation provided by SIMATIC NET. You will find information on the basic aspects of the OPC indicated by the graphic shown below:



Grundlagen der OPC-Schnittstelle

3.1 Significance of Configuration

The OPC Server Application Type

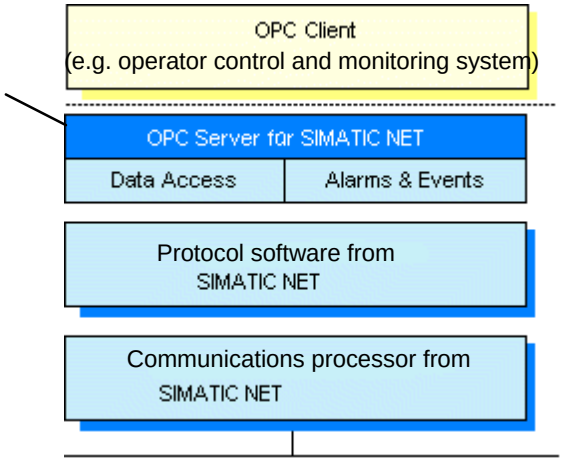
The OPC Server can be configured as an interface to all available communication protocols. You can create this object only once in a PC station.

You can then use this OPC Server for communication with any number of user programs (OPC clients).

What Can be Configured?

You can configure the following:

- Protocol and service-dependent properties
- Properties for specific connections



Standard Situation: Using the default settings

In the simplest case (in other words, the standard situation), you simply need to create the OPC Server in the PC station. You must also create the communications modules used in the station and configure communication connections.

The steps are described in detail in Section 2.3 Configuring with SIMATIC NCM PC.

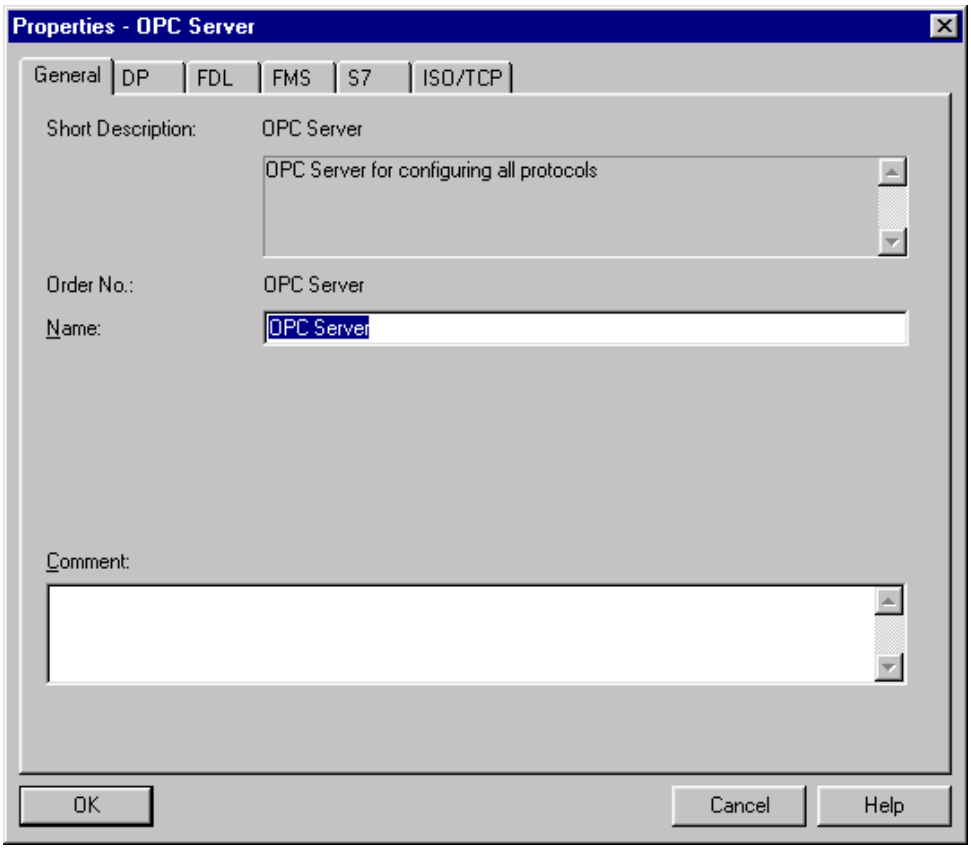
If you use the PC Station Wizard, you will be able to put your PC station into operation both quickly and simply.

Using default settings or configured parameters

The parameters you can set with NCM PC all have default settings so that in most cases problem-free communication is possible.

3.2 Configuring the Properties of the OPC Server

To check the properties of the OPC Server or to modify parameters, open the Properties dialog of the OPC Server object.



The “General” tab contains the formal parameters for identifying the OPC Server. In the other tabs, you can make parameter settings for the OPC server related to the specific protocols.

These parameters are independent of the communication connections or a DP master system that you configure separately.

The table below provides you with an overview of the possible parameter settings depending on the protocol or service type.

Table 3-1

Parameter / Function	Possible Settings / Significance	Can be set for a specific protocol				
		DP	FDL (SEND/ RECEIVE)	FMS	S7	ISO/TCP (SEND/RECEIVE)
Scan cycle time	Here, you make the settings to control updating by the OPC Server. The scan cycle time decides how often the OPC server updates the values of the OPC items.	x	x	x	x	x
Access protection	You can specify the access rights to individual variables or variable groups for each specific protocol. You can, for example, prevent variables calculated internally by the controller from being overwritten. As default, no access protection is activated.	x	x	x	x	x
VFD	VFD (Virtual Field Device) is the neutral description of a device used in FMS. Communication connections (FMS connections) are then configured for the VFDs. Here, you inform the OPC server of the required VFDs. During configuration, you then assign the VFD to the FMS connection. When accessing variables in the PC application, you also reference the VFD. Extra function: creating the object dictionary Here, you can also create the object dictionary (OD) belonging to a VFD. The FMS variables (name and structure) are defined in the object dictionary.			x		
Connection parameters	Here, you can make the settings required for communication for services that do not require specific connection configuration.				x	
Segmentation	Special settings for providing the data buffers independent of specific connections.					x

Please note that the parameters are described in detail in the online help for each individual dialog in NCM PC.

3.3 Configuring Connection Properties for the OPC Server

When using OPC, communication connections are established and managed by the OPC Server. As a result, you create the communication connections only for the “OPC Server” application.

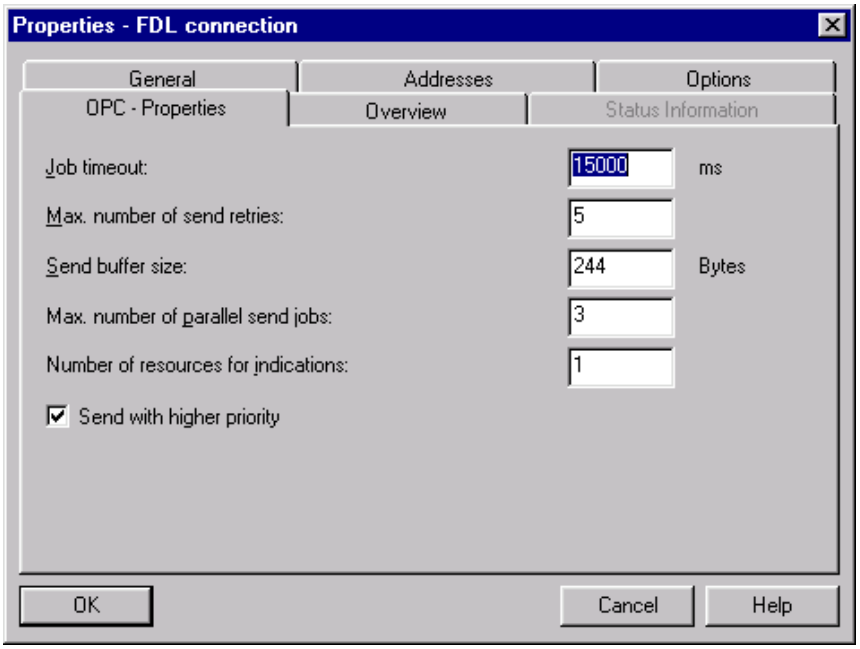
How to create a connection for PC applications is described in Section 2.3.5.

If a connection is created for the OPC Server, the properties dialog for the connection includes an additional tab, “OPC – Properties”.

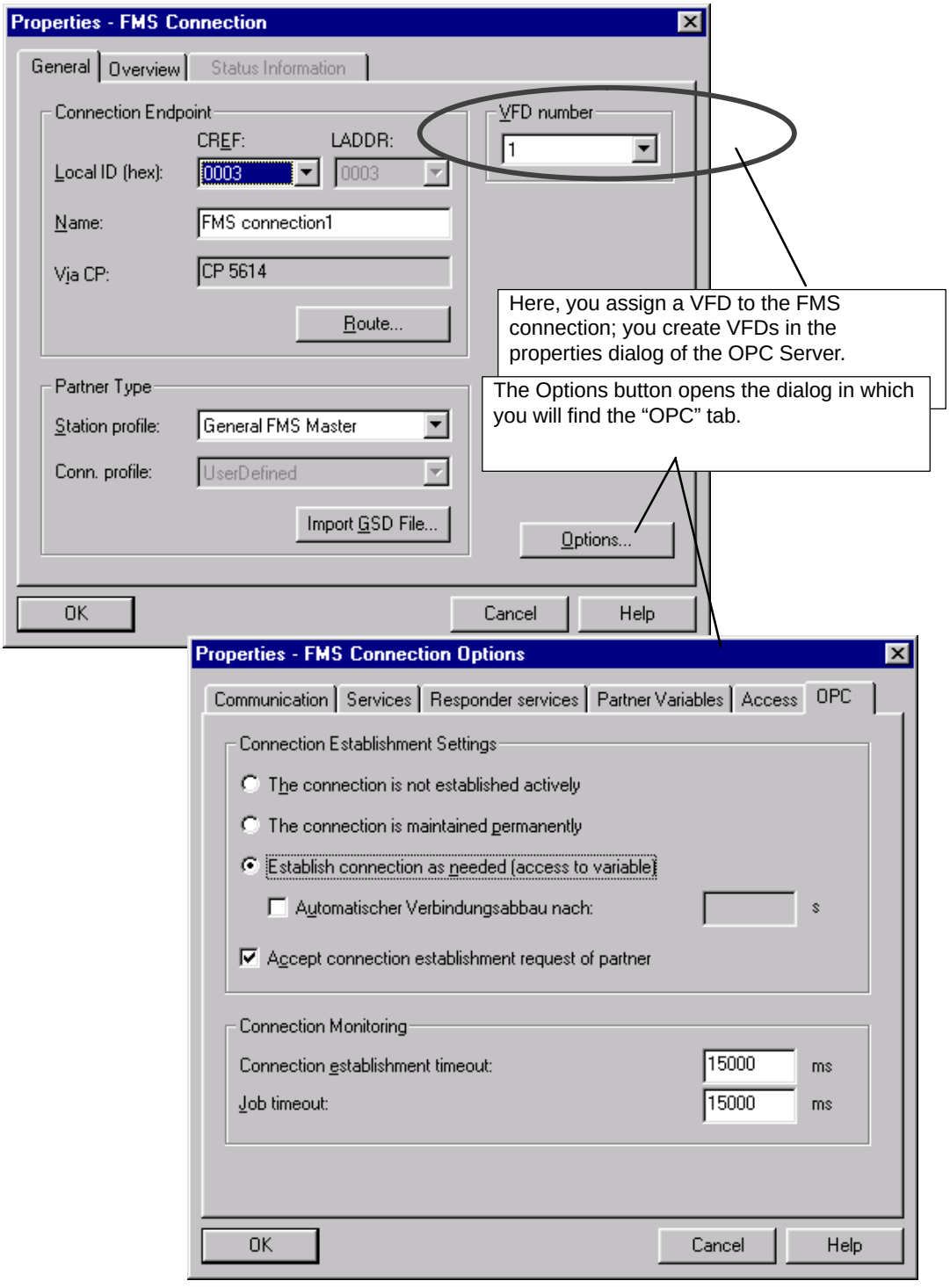
The dialogs shown below for the various protocols provide you with an overview of the possible settings; in these examples, the parameters have their default settings.

Please note that the parameters are described in detail in the online help for each individual dialog in NCM PC.

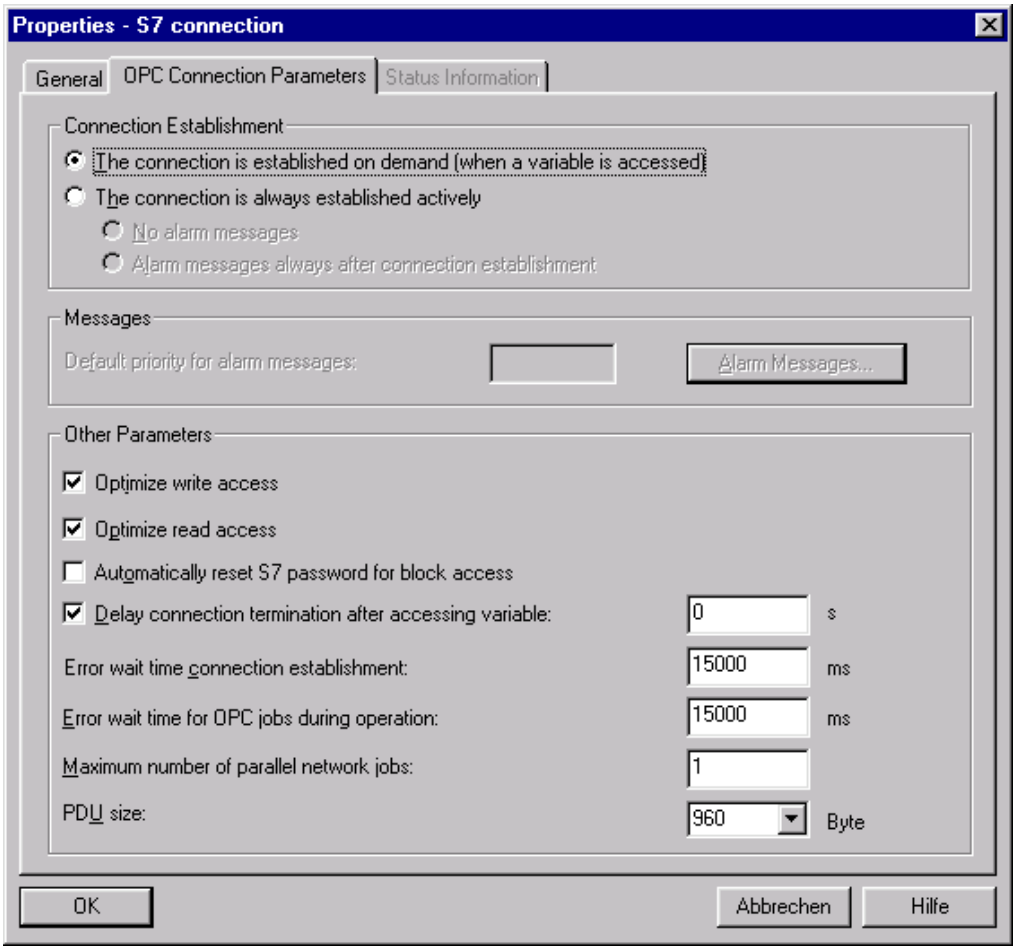
FDL Connection (SEND/RECEIVE Interface)



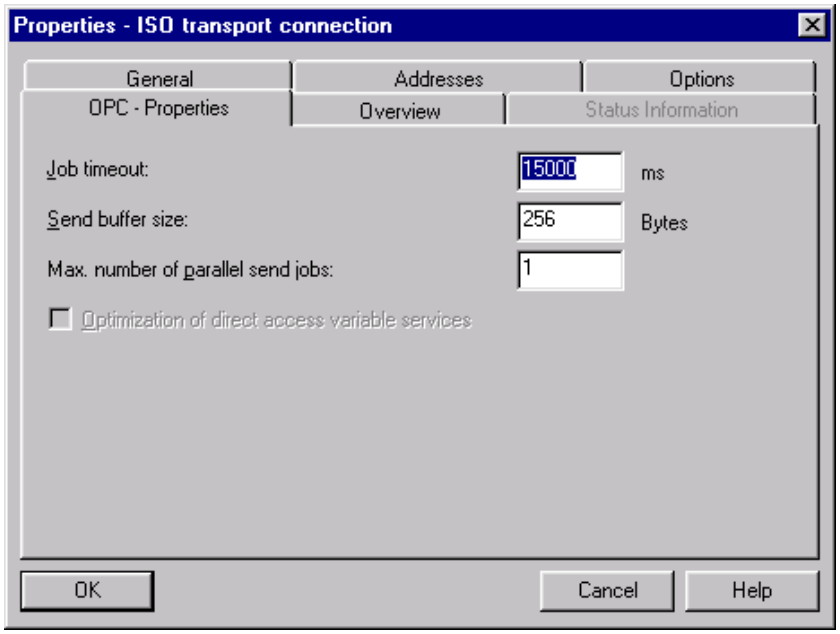
FMS Connection



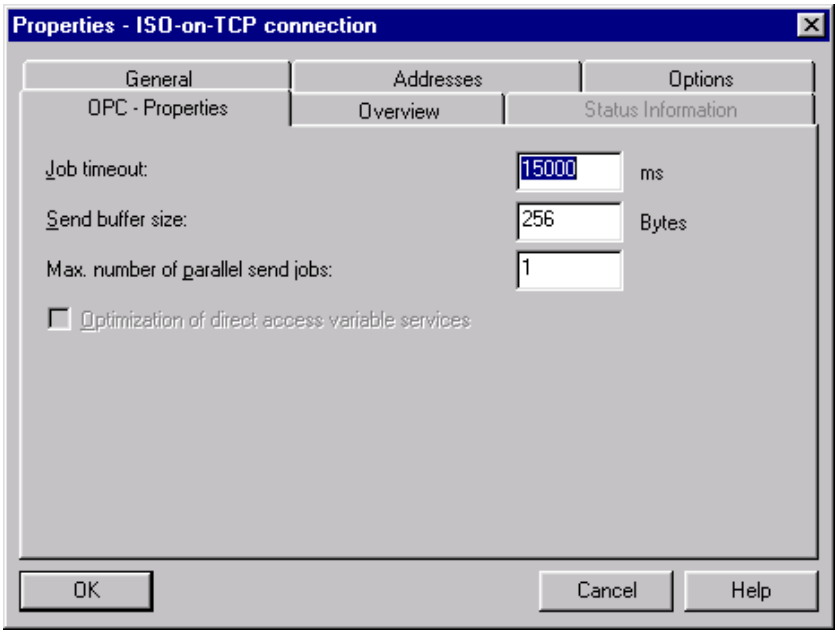
S7 Connection (S7 Communication)



ISO Transport Connection (SEND/RECEIVE Interface)



ISO-on-TCP Connection (SEND/RECEIVE Interface)



❑

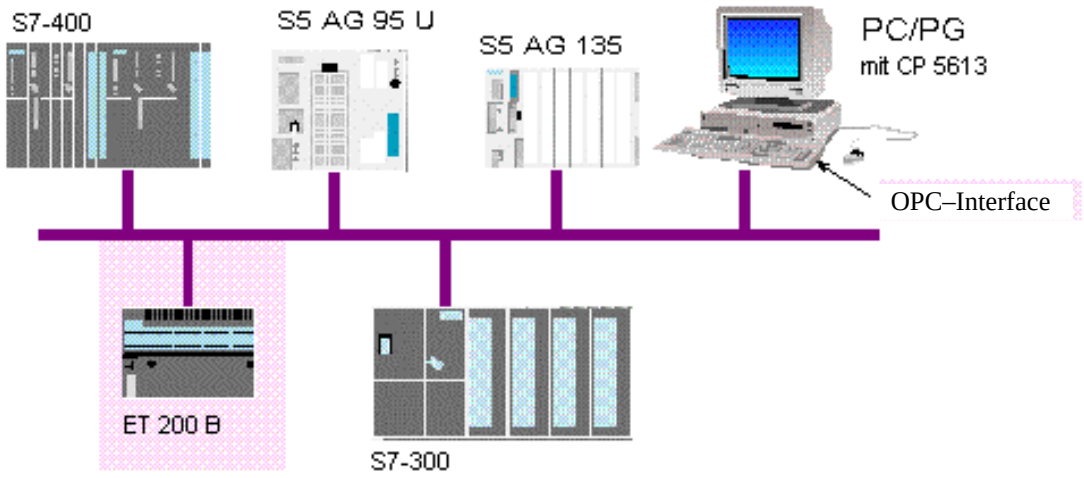
4 Quick Start for the OPC Application for PROFIBUS-DP

4.1 Example of a PROFIBUS Configuration

How does a communication system with PROFIBUS appear?

Below, you will find an example of a communication system using PROFIBUS.

Typical communication partners are attached to the PROFIBUS network and they can be reached over the OPC Server.



Example of a PROFIBUS Configuration

Communication takes place between two devices or modules. Communication in this sense means the transfer of data between two communication partners with different characteristics, controlling the communication partner, and querying the operating state of the partner. Communication with an ET 200 B is described in detail.

4.2 Quick Start for PROFIBUS Communication with OPC

Introduction

This example illustrates how you can connect an ET 200 B DP slave with a CP 5613 in a PC station over PROFIBUS-DP.

This section describes the programs used for configuring a PC station and a DP slave. You will also see how to use the OPC Scout program for communication with the OPC Server.

Requirements

If you want to try out the example yourself, you require the following:

- a PC
- a communication module for PROFIBUS (CP 5613)
- the SIMATIC NET CD 07/2001 software
- an ET 200 B DP slave
- PROFIBUS cabling between the PC module and ET 200 device

4.2.1 Hardware and Software Installation

Installing the Software

	Activity
1.	Turn on the PC and start Windows.
2	Insert the SIMATIC NET 07/2001 CD. If the installation program does not start the CD automatically, start the Setup.exe program on the CD.
3.	Follow the on-screen instructions of the installation program. Install the SIMATIC NET software and SIMATIC NCM PC.

Installing the CP 5613

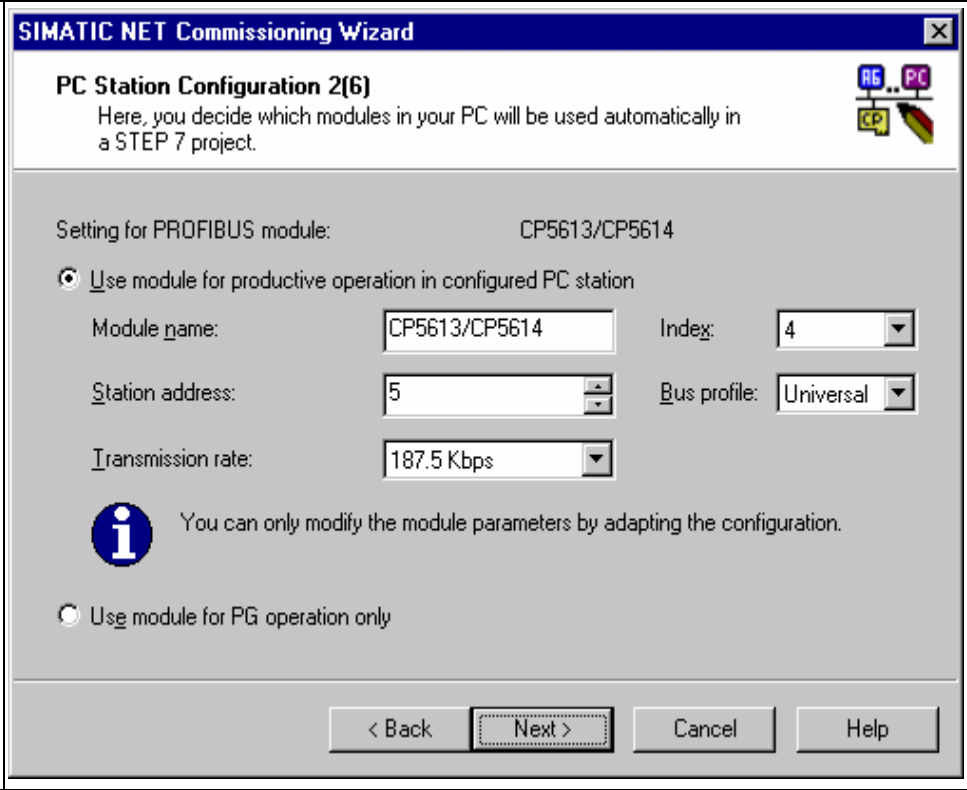
	Activity
1.	Shut down the PC and turn it off.
2.	Disconnect the power cable.
3.	Read the instructions for installing cards in the manufacturer's instructions for your PC.
4.	Insert the CP 5613 module in a PCI slot.
5.	Reassemble the PC as described in the instructions of the PC manufacturer and reconnect the power cable.

Attaching to the Network

	Activity
1.	Connect the PROFIBUS cable to the CP 5613.
2	Connect the DP slave to the PROFIBUS cable.
3.	Check the terminators on the connectors. The terminators at both ends of the cable must be activated ("On").

4.2.2 Configuring the PC Station

Basic Configuration of the Installed Module

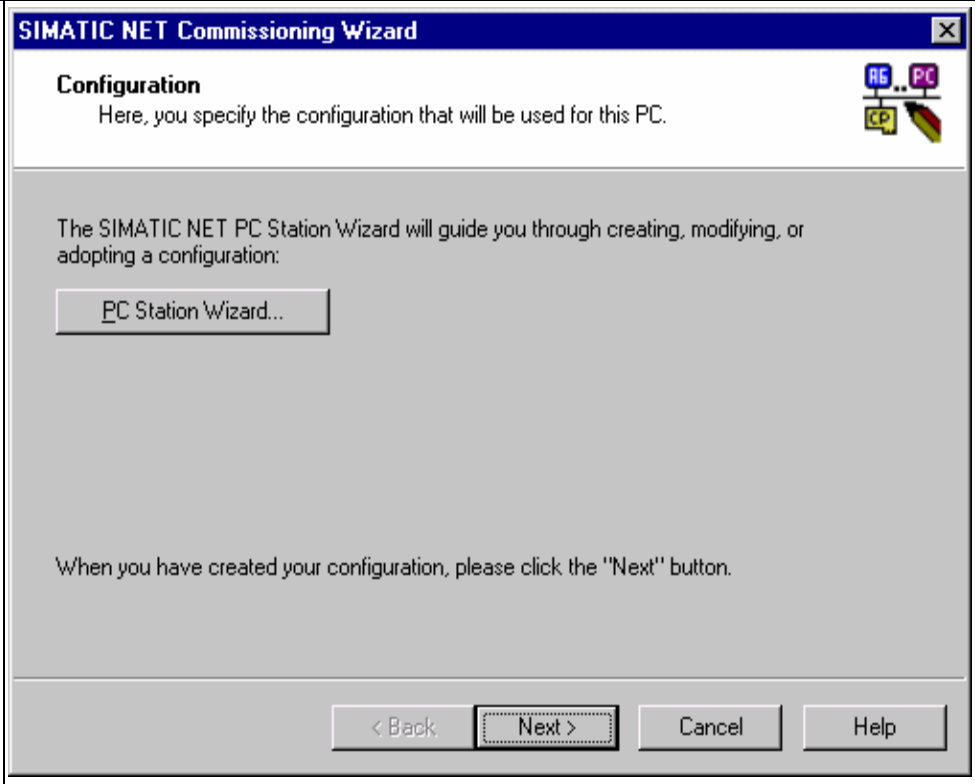
	Activity
1.	The welcome page of the Commissioning Wizard opens. Click “Next”.
2.	
3.	Leave the defaults as they are and click “Next”.
4.	On the next page, confirm the configuration of the modules by clicking “Next”. This saves the configuration and you can no longer go back.

You have now made the following settings in the dialog:

- The module will be used for productive communication with the DP protocol. This requires a configuration that will be created with SIMATIC NCM PC or STEP 7.
- The module will be initialized with the PROFIBUS address 5. This means that it would be possible to download to the PC station over PROFIBUS from an engineering station with SIMATIC NCM PC or STEP 7. In this example, SIMATIC NCM PC is installed locally and a download over the network is not necessary.
- Index 4 is the identification number for internal addressing of the module within the PC station. Each configured component of a PC station has a unique index. During configuration, the index can be set using SIMATIC STEP 7/HW Config.

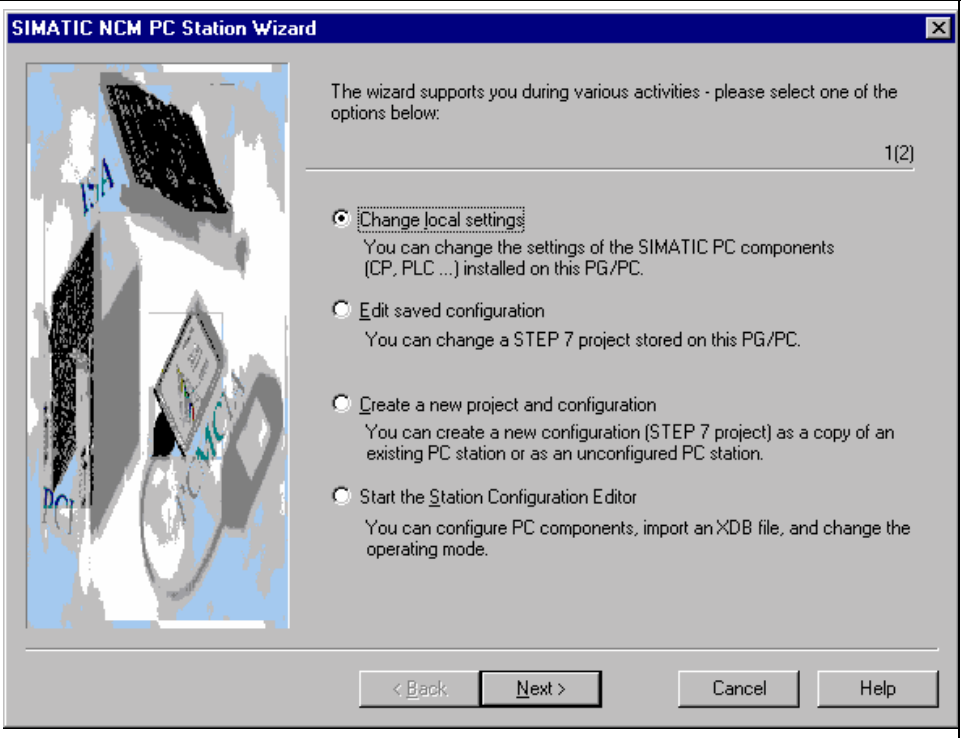
4.2.3 STEP 7 – Starting the PC Station Wizard

Specifying the Configuration

	Activity
1.	
2.	Only click the “Next” button in the Commissioning Wizard dialog when you have completed the configuration.

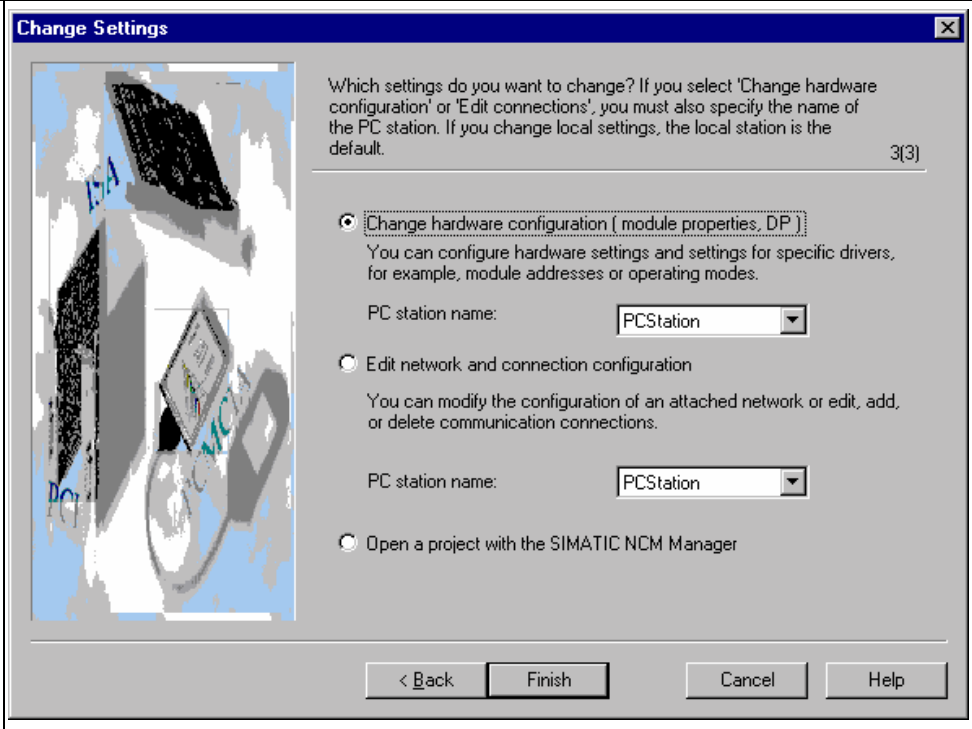
4.2.4 STEP 7 – PC Station Wizard: Selecting the Editing Mode

Changing Settings

	Activity
1.	
2.	Click the “Next” button.

4.2.5 STEP 7 – PC Station Wizard: Changing Settings

Changing the Hardware and Driver Configuration

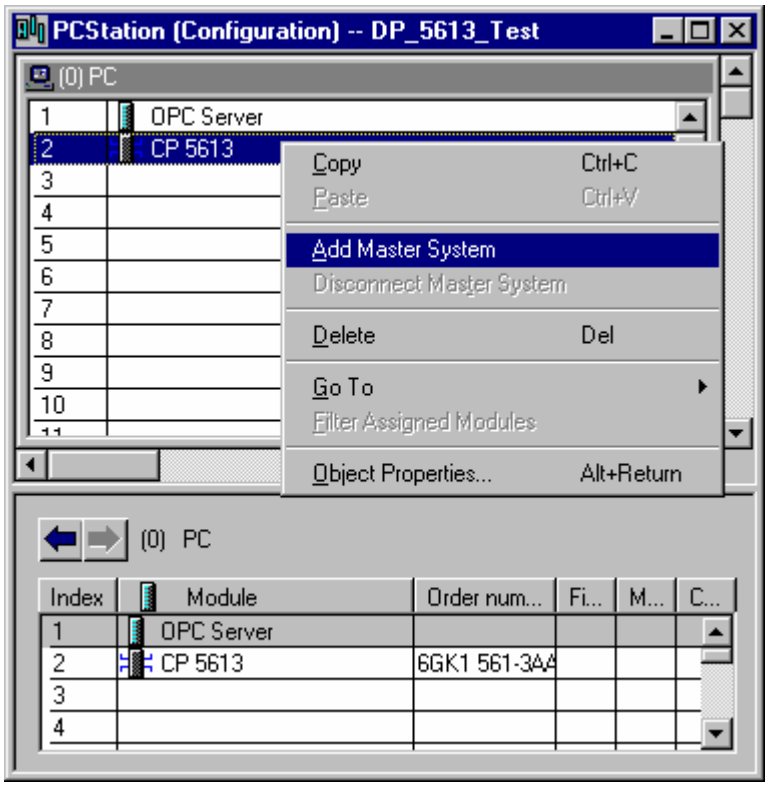
	Activity
1.	
2.	Click the “Finish” button. This starts HW Config of SIMATIC STEP 7.

4.2.6 HW Config: Inserting a DP Master System

CP 5613 as DP Master

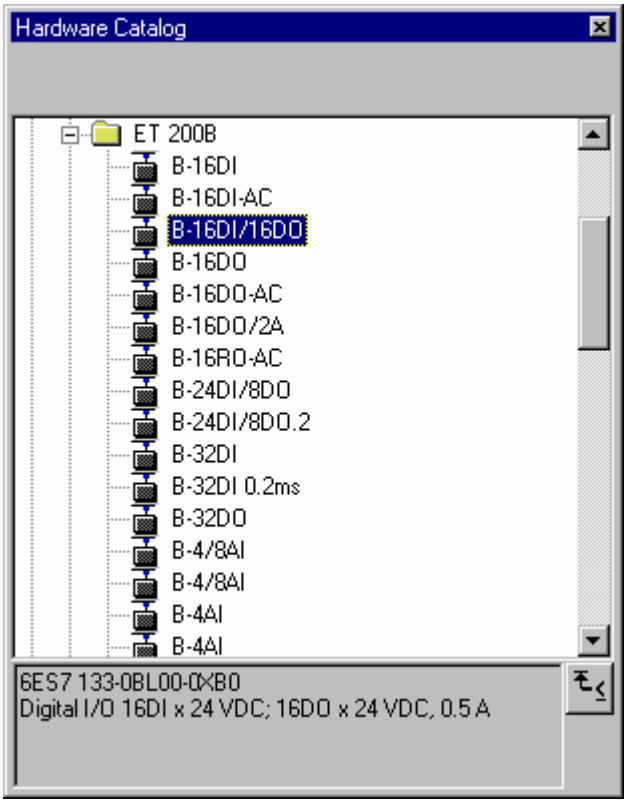
In the STEP 7 project created by the wizard, a SIMATIC PC station was created automatically as an image of the local PC. This PC station already includes the OPC server as the basic component for productive communication and the CP 5613.

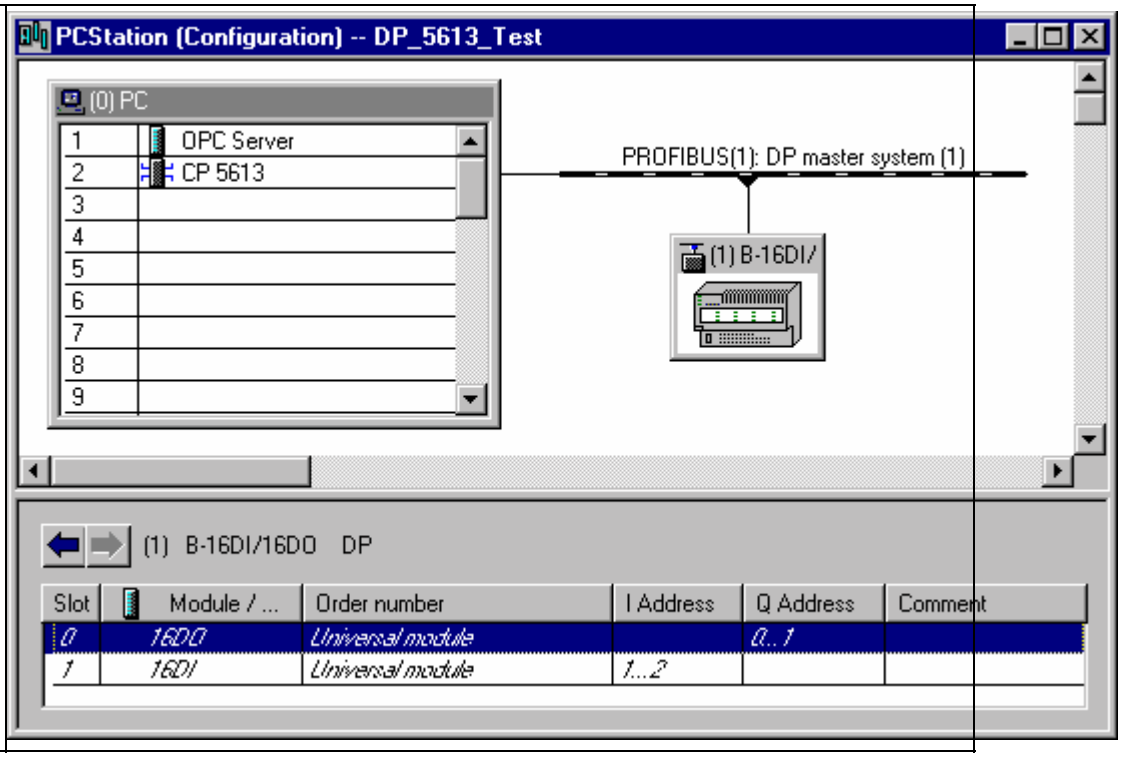
You require a DP master system so that you can assign DP slaves. For the DP mode, a DP master system must therefore be added to the CP 5613:

	Activity
1.	
2.	Select the “Insert DP Master System” menu command.

4.2.7 HW Config: Inserting a DP Slave

ET 200B as DP Slave

	Activity
1.	Open the catalog in the right-hand half of the window if it is not already open. You open the catalog by clicking on the following button:
2.	

3.	

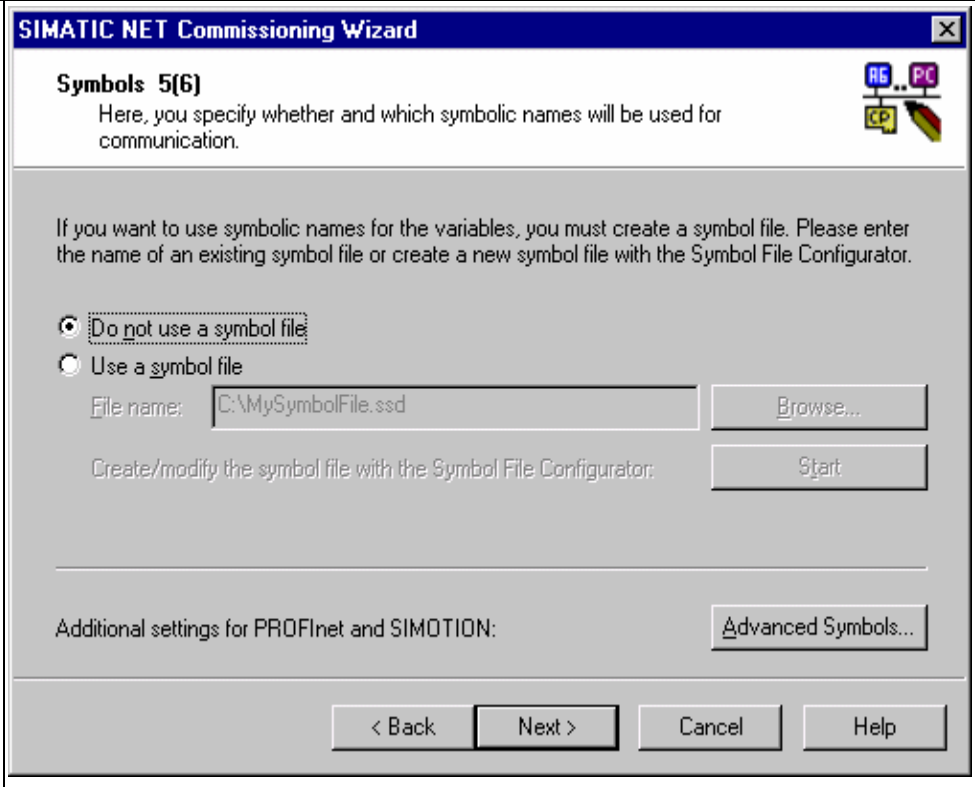
4.2.8 HW Config: Downloading the Configuration

Finishing configuration and returning to the Commissioning Wizard

	Activity
1.	
2.	
3.	Close HW Config.
4.	Activate the Commissioning Wizard dialog box and click the “Next” button.

4.2.9 STEP 7 – Commissioning Wizard: Specifying the Use of Symbol Files

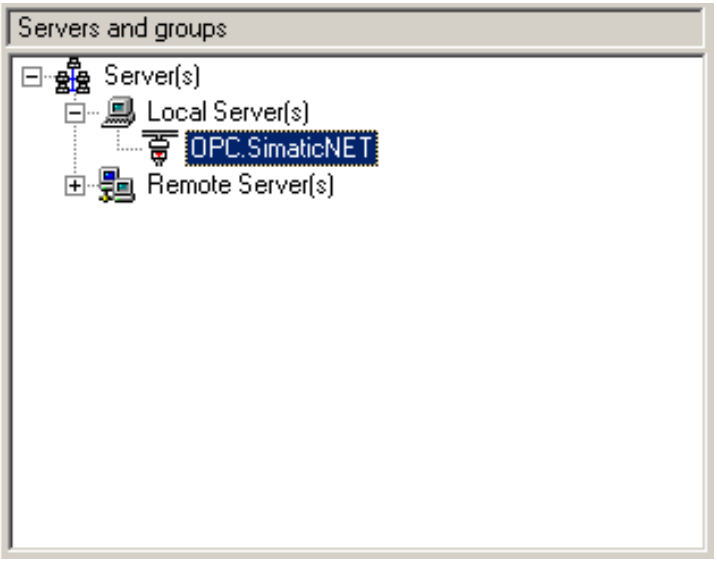
Completing Commissioning

	Activity
1.	
2.	Click the “Next” button.
3.	The last dialog box of the Commissioning Wizard appears. Click the “Finish” button to complete your work with the wizard.

4.2.10 OPC Scout: Establishing a Connection to the OPC Server

The OPC Scout as Client for Commissioning and Testing

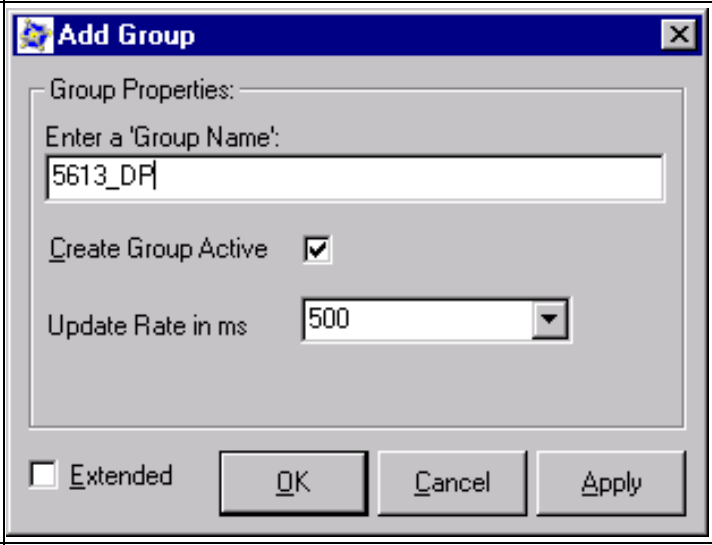
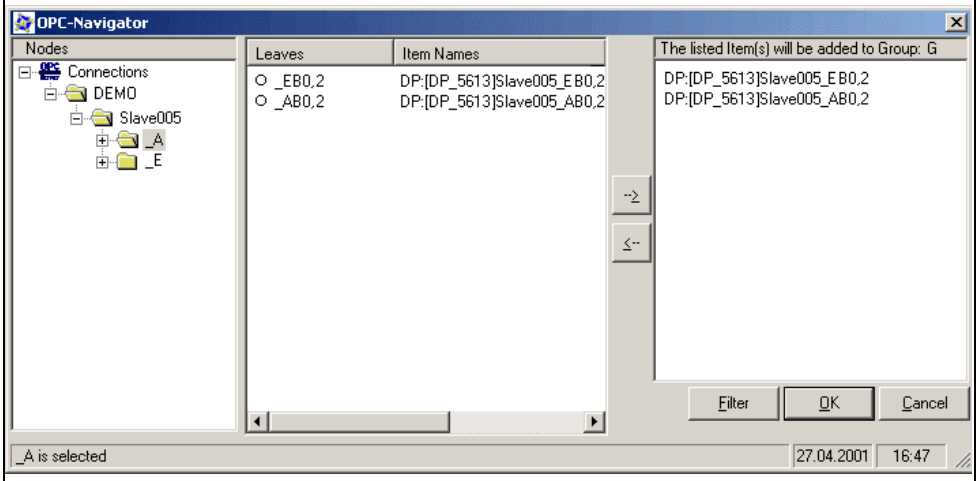
You can now access the objects of the programmable controller with any OPC client. The OPC Scout ships with this product as the tool for commissioning and testing. Follow the steps outlined below to set the values of the variables of the DP slave using the OPC Scout:

	Activity
1.	Start the OPC Scout in the Start menu: Start > SIMATIC > SIMATIC NET > PROFIBUS > CP5613_CP5614 > OPC Scout
2.	

4.2.11 OPC Scout: Inserting a Group and Variables

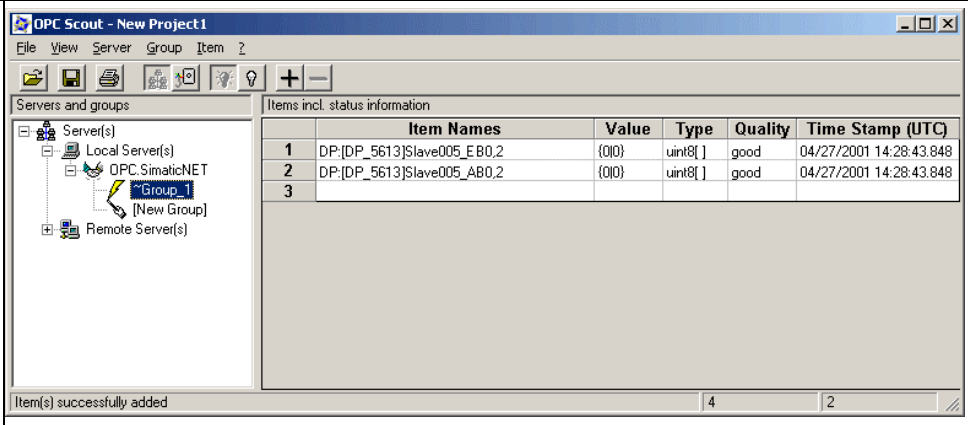
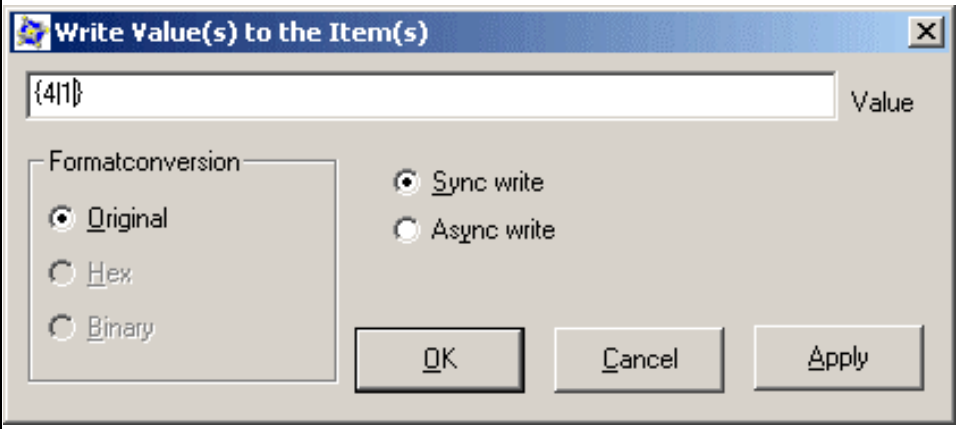
Organizing Process Variables

The process variables of the OPC Server (known as OPC items) are assigned to groups. You therefore require an OPC group before you can insert OPC variables. Follow the steps outlined below to create a group and add items to it:

	Activity
1.	
2.	Double-click on the group entry “5613_DP” to open the OPC Browser. In the left-hand pane, you will see the hierarchically arranged name space of the OPC variables.
3.	
4.	Select the following OPC items from the appropriate branches in the left-hand window and transfer these variables to the right-hand pane by clicking on the arrow button. The structure displayed and the variable names depend on the names specified in the STEP 7 program. DP:[CP_5613]Slave005IB0,2 DP:[CP_5613]Slave005QB0,2 The items are added to the group after you confirm the dialog with OK.

4.2.12 OPC Scout: Displaying and Modifying Values of Variables

Executing Synchronous and Asynchronous Write Jobs

	Activity
1.	
2	Now double-click on the “Value” cell of the output byte with the content {0|0} (first table row). A dialog opens in which you can change the value of a variable.
3.	
4.	Click the “OK” button to start the write job.

❑

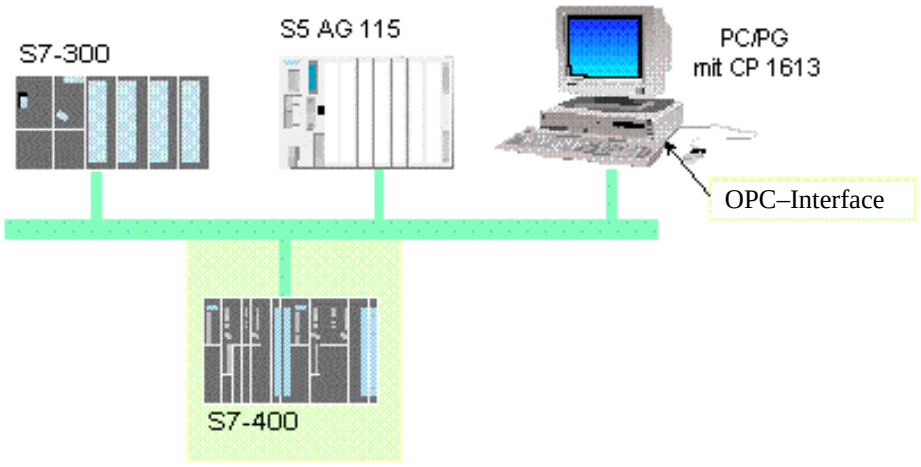
5 Quick Start for the OPC Application for Industrial Ethernet

5.1 Example of an Industrial Ethernet Configuration

How does a communication system with Industrial Ethernet appear?

Below, you will find an example of a communication system using Industrial Ethernet.

Typical communication partners are attached to Industrial Ethernet and they can be reached over the OPC Server.



Example of an Industrial Ethernet Configuration

Communication takes place between two devices or modules. Communication in this sense means the transfer of data between two communication partners with different characteristics, controlling the communication partner, and querying the operating state of the partner. Communication with an S7-400 station using the S7 protocol (SEND/RECEIVE interface) is described in detail below.

5.2 Quick Start for Industrial Ethernet Communication with OPC

Introduction

This example illustrates how you can connect an S7-400 programmable controller with a PC station over Industrial Ethernet.

This section describes the programs used for configuring a PC station for connecting to an S7-400. You will see how symbolic variables in the S7 program are made available in OPC. You will also see how to use the OPC Scout program that is supplied with the product for communication with the OPC Server.

Requirements

If you want to try out the example yourself, you require the following:

- a PC
- a communication module for Industrial Ethernet (CP 1613)
- the SIMATIC NET CD 07/2001 software
- an S7-400 with a CP 443-1
- Industrial Ethernet cabling between the PC module and S7 device

For the S7-400, you require an STEP 7 project. In the project, you specify the hardware configuration and the programs and data blocks and define a symbol table.

In the example, you will expand your existing STEP 7 project by adding a PC station and will configure the connection between the PC station and the S7-400.

5.2.1 Hardware and Software Installation

Installing the Software

	Activity
1.	Turn on the PC and start Windows.
2	Insert the SIMATIC NET 07/2001 CD. If the installation program does not start the CD automatically, start the Setup.exe program on the CD.
3.	Follow the on-screen instructions of the installation program.
4.	Once you have completed the installation, the Commissioning Wizard starts automatically.

Installing the CP 1613

	Activity
1.	Shut down the PC and turn it off.
2.	Disconnect the power cable.
3.	Read the instructions for installing cards in the manufacturer's instructions for your PC.
4.	Insert the CP 1613 module in a PCI slot.
5.	Reassemble the PC as described in the instructions of the PC manufacturer and reconnect the power cable.

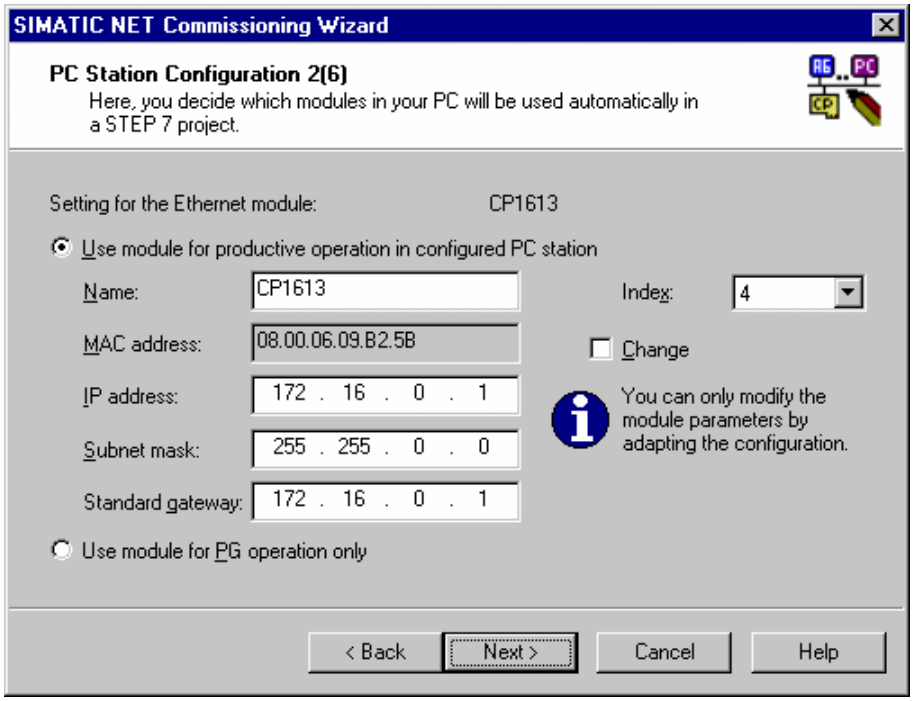
Attaching to the Network

	Activity
1.	Connect the Ethernet cable to the CP 1613.
2	Connect the S7-400 device to the network cable.

5.2.2 Configuring the PC Station

Basic Configuration of the Installed Module

	Activity
1.	The welcome page of the Commissioning Wizard opens. Click "Next".

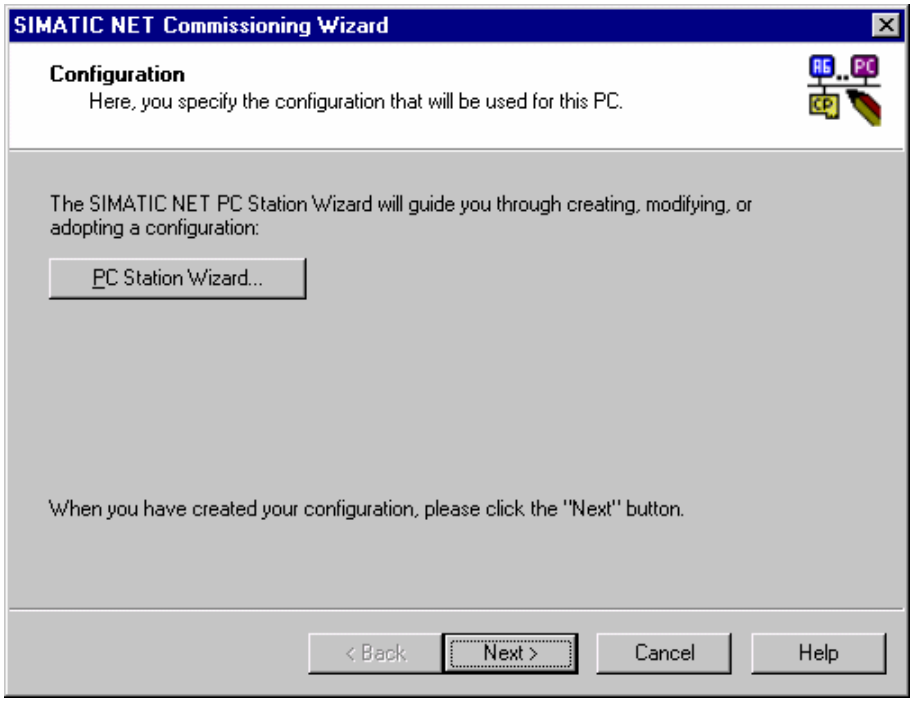
2	
3.	Leave the defaults as they are and click “Next”.
4.	On the next page, confirm the configuration of the modules by clicking “Next”. This saves the configuration and you can no longer go back.

You have now made the following settings in the dialog:

- The module will be used for productive communication. This requires a configuration that will be created with SIMATIC NCM PC or STEP 7.
- The module will be initialized with the MAC address “08.00.06.01.55.06”. This means that it would be possible to download to the PC station over Industrial Ethernet from an engineering station with SIMATIC NCM PC or STEP 7. In this example, SIMATIC NCM PC is installed locally and a download over the network is not necessary.
- Index 4 is the identification number for internal addressing of the module within the PC station. Each configured component of a PC station has a unique index. During configuration, the index can be set using SIMATIC STEP / HW Config.

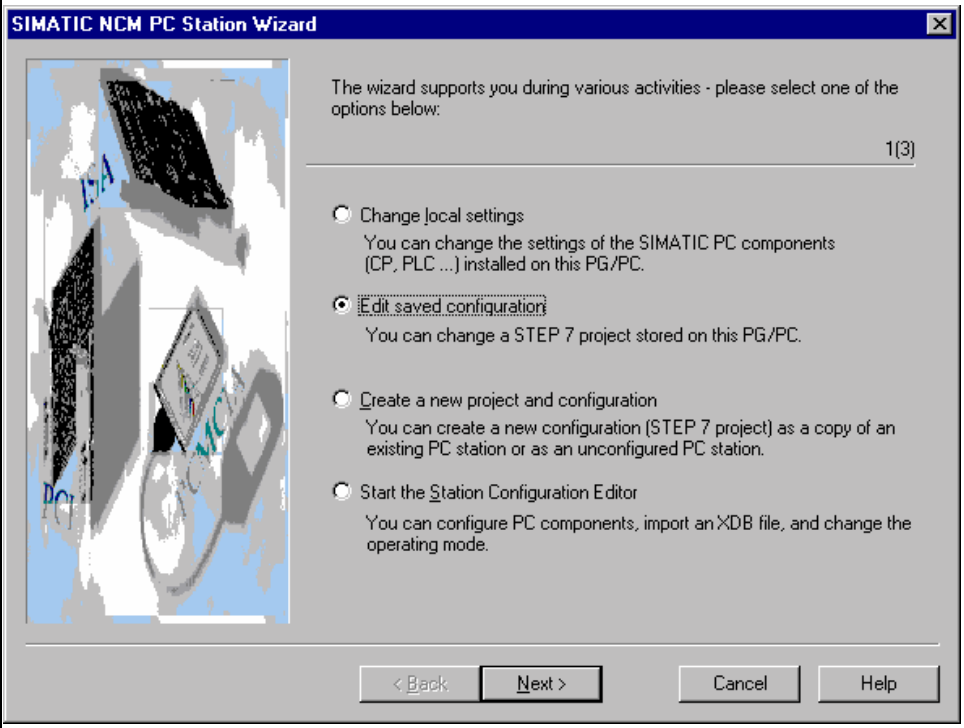
5.2.3 STEP 7 – Starting the PC Station Wizard

Specifying the Configuration

	Activity
1.	
2.	Only click the “Next” button in the Commissioning Wizard dialog when you have completed the configuration.

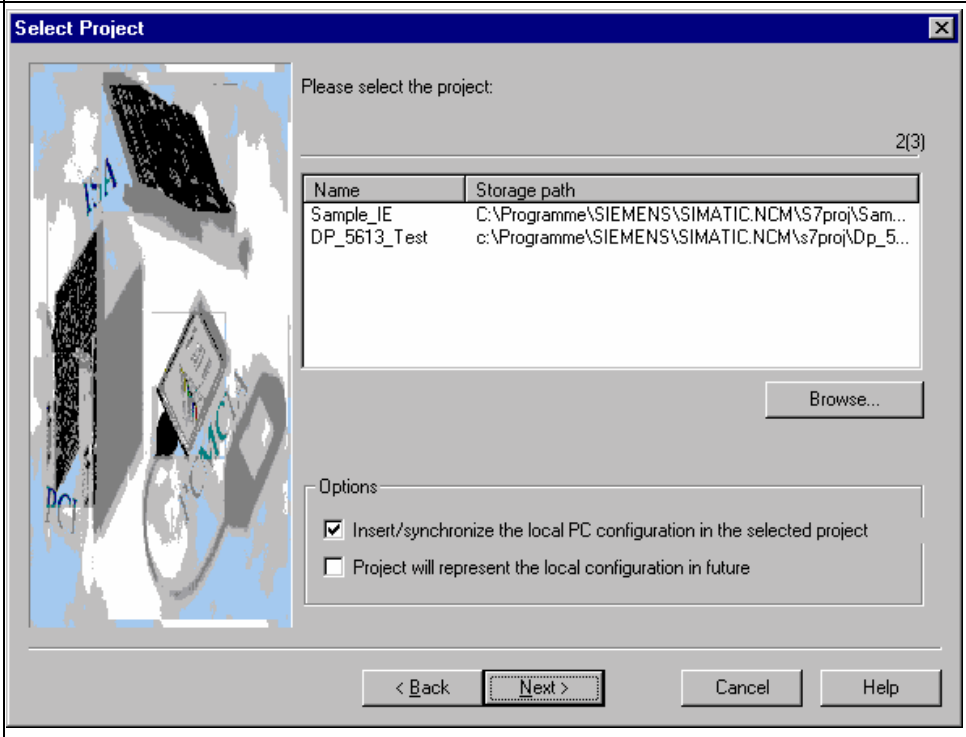
5.2.4 STEP 7 – PC Station Wizard: Selecting the Editing Mode

Changing Settings

	Activity
1.	
2.	Click the “Next” button.

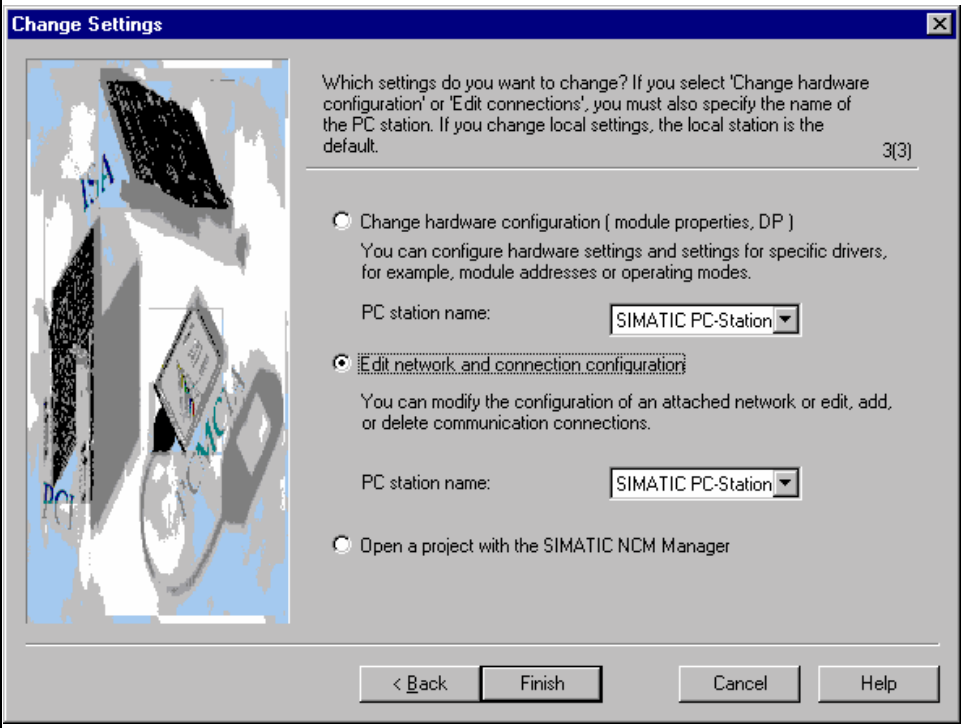
5.2.5 STEP 7 – PC Station Wizard: Opening the Project

Creating a Copy of the Local PC Station

	Activity
1.	
2.	Click the “Next” button.

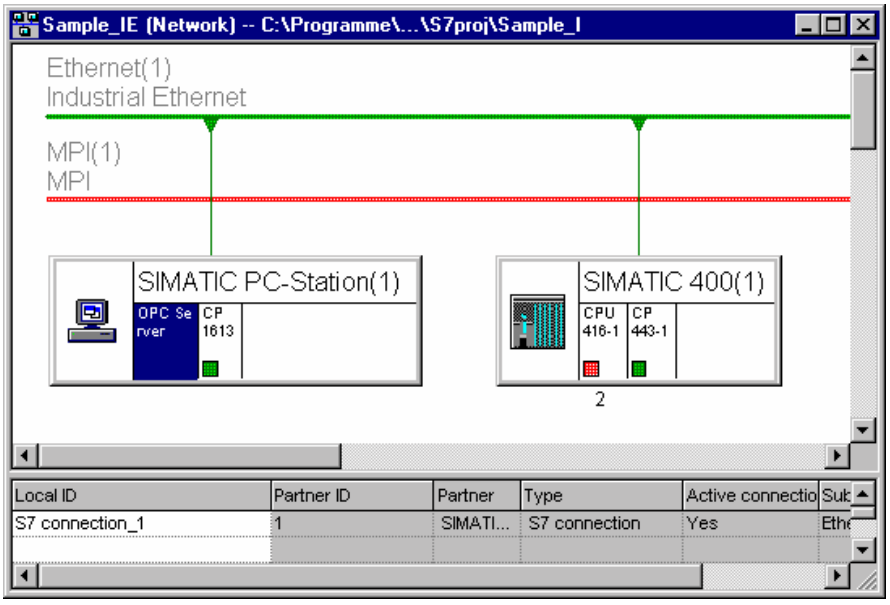
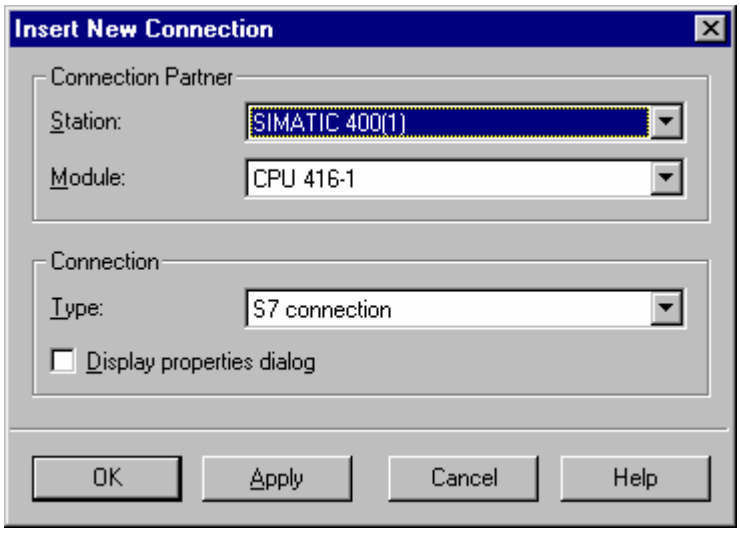
5.2.6 STEP 7 – PC Station Wizard: Changing Settings

Editing the Network and Connection Configuration

	Activity
1.	
2.	Click the “Finish” button. This starts NETPRO of STEP 7.

5.2.7 STEP 7 – NetPro

Inserting an S7 Connection

	Activity
1.	
2.	 The S7-400 device is automatically entered as the connection partner and the connection type “S7 connection” will be set.
3.	Confirm this dialog by clicking “Apply”. You have now configured the connection between the PC station and the S7-400.

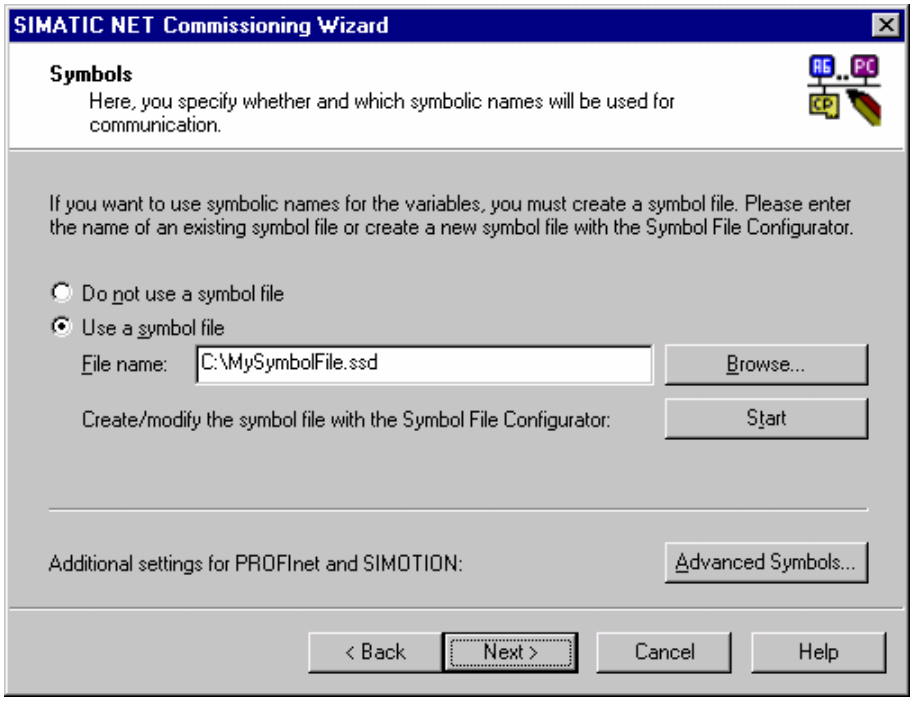
5.2.8 STEP 7 NetPro: Downloading the Configuration

Finishing Configuration and Returning to the Commissioning Wizard

	Activity
1.	
2.	Select both the PC station and the S7 device by first clicking on the PC station and then on the S7 device while holding down the CTRL key.
3.	
4.	Close NetPro.
5.	Activate the Commissioning Wizard dialog box and click the “Next” button.

5.2.9 STEP 7 – Commissioning Wizard

Specifying the Use of Symbol Files

	Activity
1.	

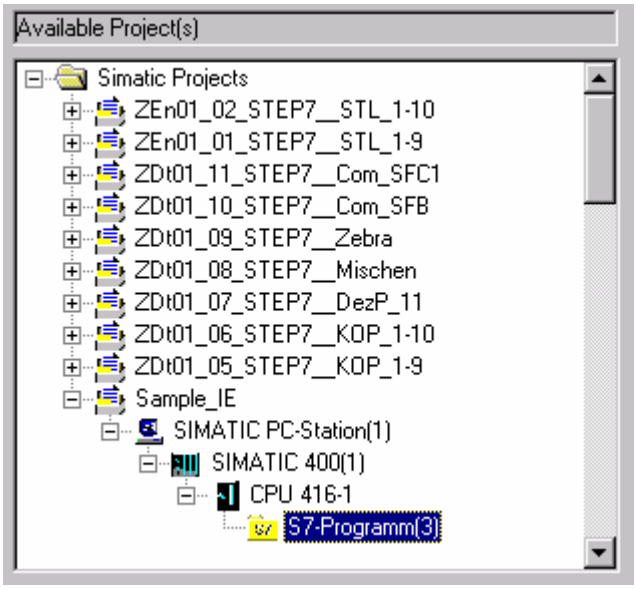
2.	Click the “Start” button to start the Symbol File Configurator.
3.	Click the “Next” button only after the symbol file has been created with the Symbol File Configurator and the file name of the created file has been entered.

5.2.10 Symbol File Configurator

Inserting a New Program

To create a symbol file with the Symbol File Configurator, the programs and therefore the symbol definitions must be selected in a STEP 7 project. The Symbol File Configurator then automatically enters the content of the symbol table and the definition of the data blocks of the STEP 7 program in the file.

To insert a program, the corresponding S7 device must be linked to a PC station over an S7 connection as in this example.

	Activity
1.	 The dialog for selecting a new program opens.
2.	Select the STEP 7 project in which the program was defined in the left-hand pane of the window. This is a project you created and contains the PC station and the S7-400 device.
3.	

4.	
5.	Click the “OK” button. These symbolic names are now extracted from the STEP 7 project and entered in a symbol file. The dialog is closed and the symbolic name space that has been created is displayed in the main window.
6.	Save the symbol file and close the Symbol File Configurator.

5.2.11 SIMATIC NET Commissioning Wizard

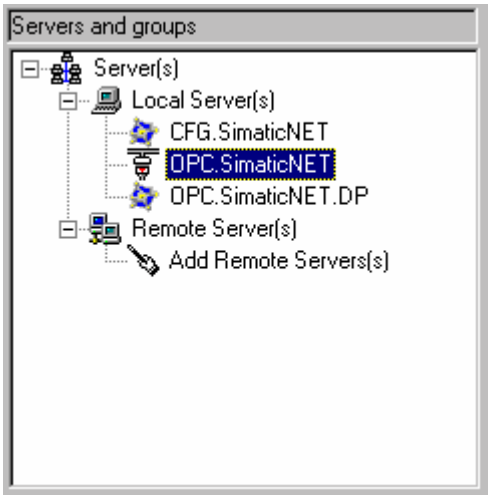
Completing Commissioning

	Activity
1.	When you closed the Symbol File Configurator, the path to the symbol file was entered in the “Symbols” dialog of the Commissioning Wizard. Now click the “Next” button.
2.	The last dialog box of the Commissioning Wizard appears. Click the “Finish” button to complete your work with the wizard.

5.2.12 OPC Scout: Establishing a Connection to the OPC Server

The OPC Scout as Client for Commissioning and Testing

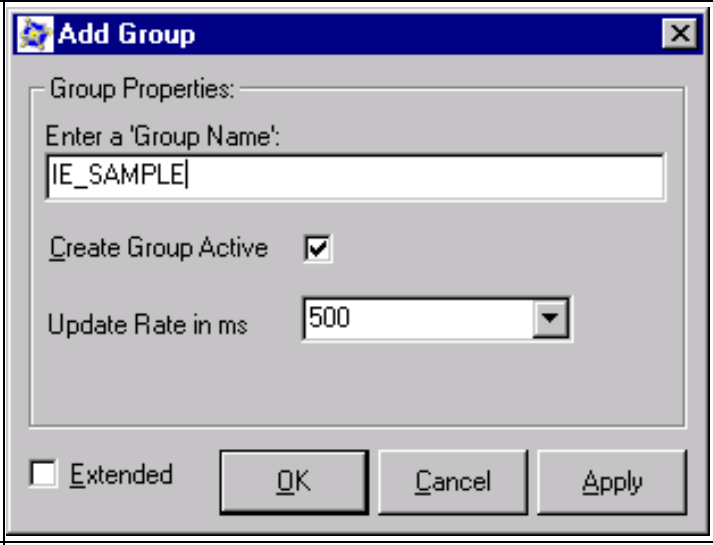
You can now access the data objects of the S7 station with any OPC client. The OPC Scout ships with this product as the tool for commissioning and testing. Follow the steps outlined below to read the inputs and set the outputs using the OPC Scout:

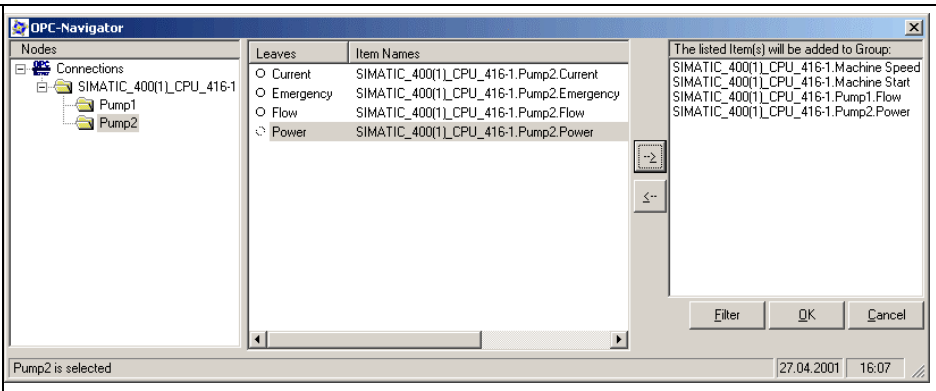
	Activity
1.	Start the OPC Scout in the Start menu: Start > SIMATIC > SIMATIC NET > Industrial Ethernet > CP1613 > OPC Scout
2.	

5.2.13 OPC Scout: Inserting a Group and Variables

Organizing Process Variables

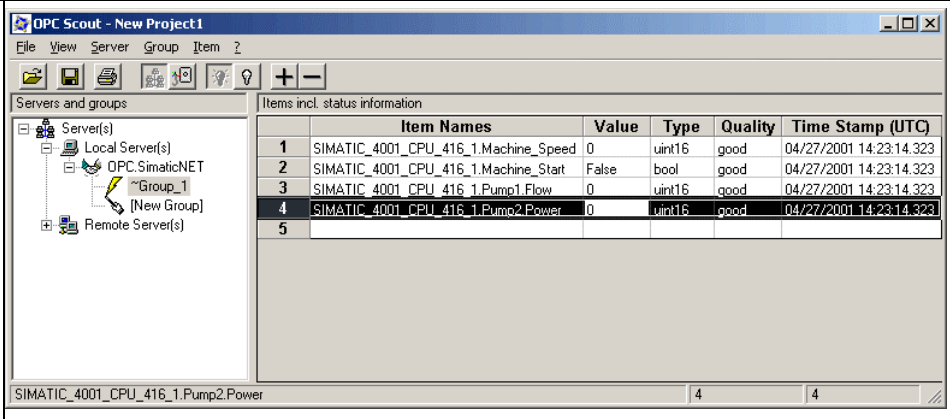
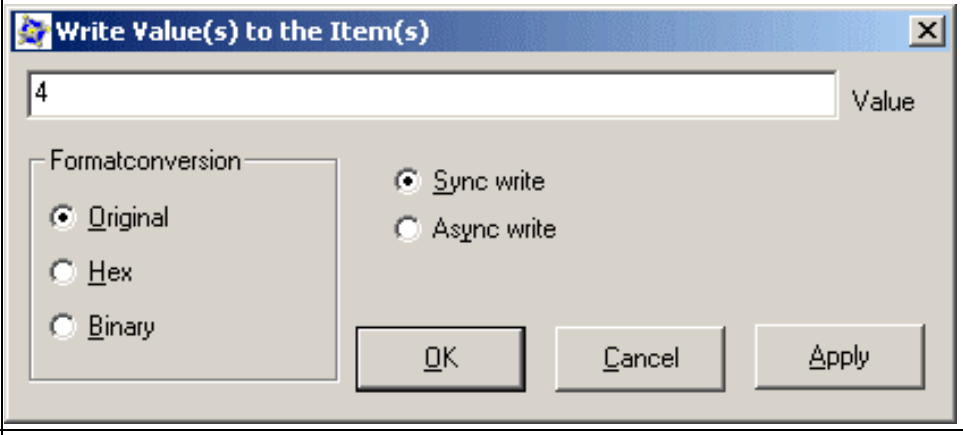
The process variables of the OPC Server (known as OPC items) are assigned to groups. You therefore require an OPC group before you can insert OPC variables. Follow the steps outlined below to create a group and add items to it:

	Activity
1.	
2.	Double-click on the group entry “IE_SAMPLE” to open the OPC Browser. In the left-hand pane, you will see the hierarchically arranged name space of the OPC variables.

3.	
4.	Select the following OPC items from the appropriate branches in the left-hand window and transfer these variables to the right-hand pane by clicking on the arrow button. Examples: SIMATIC_400(1)_CPU_416-1.Machine Speed SIMATIC_400(1)_CPU_416-1.Machine Start SIMATIC_400(1)_CPU_416-1.Pump1.Flow SIMATIC_400(1)_CPU_416-1.Pump2.Power The items are added to the group after you confirm the dialog with OK.

5.2.14 OPC Scout: Displaying and Modifying Values of Variables

Executing Synchronous Write Jobs

	Activity
1.	
2	Now double-click on the “Value” cell of one of the variables, for example on the “0” of the first OPC item. A dialog opens in which you can change the value of the variable.
3.	
4.	Click the “OK” button to start the write job.

❑

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Worldwide (Nuremberg) **Technical Support** (FreeContact) Local time: Mo.-Fr. 7:00 to 17:00 Phone: +49 (180) 5050-222 Fax: +49 (180) 5050-223 E–mail: techsupport@ad.siemens.de GMT: +1:00	**Worldwide** (Nuremberg) **Technical Support** (charged only with SIMATIC Card) Local time: Mo.-Fr. 0:00 to 24:00 Phone: +49 (911) 895-7777 Fax: +49 (911) 895-7001 GMT: +01:00	
Europe / Africa (Nuremberg) **Authorization** Local time: Mo.-Fr. 7:00 to 17:00 Phone: +49 (911) 895-7200 Fax: +49 (911) 895-7201 E–mail: authorization@nbgm.siemens.de GMT: +1:00	**America** (Johnson City) **Technical Support and Authorization** Local time: Mo.-Fr. 8:00 to 19:00 Phone: +1 423 461-2522 Fax: +1 423 461-2289 E–mail: simatic.hotline@sea.siemens.com GMT: -5:00	**Asia / Australia** (Singapore) **Technical Support and Authorization** Local time: Mo.-Fr. 8:30 to 17:30 Phone: +65 740-7000 Fax: +65 740-7001 E–mail: simatic.hotline@sae.siemens.com.sg GMT: +8:00
The languages spoken on the hotlines are German and English. On the authorization hotline, French, Italian and Spanish are also available.		

Training Center

To help you to become familiar with working with SIMATIC S7 PLCs, we offer a range of courses. Please contact your regional training center or the central training center in D 90327 Nuremberg.

Tel. + 49–911–895–3154

Infoline: Tel. +49 180 523 5611 (48 Pfg./min), Fax. 0180 523 5612

Internet: `http://www.ad.siemens.de/training`

E-mail: AD–Training@nbgm.siemens.de

Technical Support Online Services

The SIMATIC Customer Support team provides you with comprehensive additional information on SIMATIC products in its online services:

- You can obtain the latest information
  - On the Internet at `http://www.ad.siemens.de/net`
  - Using the Fax-Polling no. 08765-93 02 77 95 00
- Current Product Information leaflets and downloads which you may find useful for your product are available:
  - On the Internet at `http://www.ad.siemens.de/csi/net`
  - Via the Bulletin Board System (BBS) in Nuremberg (*SIMATIC Customer Support Mailbox)* at the number +49 (911) 895–7100.

    To access the mailbox, use a modem with V.34 (28.8 Kbps) capability whose parameters you should set as follows: 8, N, 1, ANSI, or dial in using ISDN (x.75, 64 Kbps).

Further Support

If you have further questions about SIMATIC NET products, please contact your local Siemens representative.

You will find the addresses:

- In our catalog IK PI
- On the Internet (http://www.ad.siemens.de)

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Glossary

Station Configuration Editor

The Station Configuration Editor is the user interface of the Station Manager; this allows you access to the component management of the PC station.
Here, the components are the modules and the applications involved in communications.
The Station Configuration Editor can also be used for diagnostic purposes.

Advanced PC Configuration (APC)

As of the SIMATIC NET PC/Windows CD 07/2001, a new standard for PC commissioning is available – Advanced PC Configuration. Automatic software installation, Plug and Play for all supported modules, and user–guided commissioning are also part of Advanced PC Configuration just as greatly simplified OPC configuration and the new SIMATIC NCM PC configuration tool. SIMATIC NCM PC allows configuration of SIMATIC NET PC components that is compatible with STEP 7 and serves as a substitute for the previous PC configuration tools COML S7 and COM PROFIBUS PC Edition. A common database with STEP 7 ensures comprehensive configuration including all protocols.

SIMATIC NCM PC

SIMATIC NCM PC is a configuration tool that is compatible with STEP 7 and is tailored to the requirements of PC configuration. SIMATIC NCM PC provides the full functionality for the following tasks:
– Configuring PC stations and networking them graphically
– Configuring connections
– Configuring the DP mode (DPV0 and DPV1)
– Setting network parameters for PROFIBUS
– Downloading configuration data to PC stations
– Monitoring communication with attached S7 stations using NCM Diagnostics

Station Manager

With the Station Manager, you can configure a PC in much the same way as an S7 station and download the configuration data over the network. The Station Manager is the basic component for configuration and run time of OPC applications.

PC Station

In this context, a PC station means a PC with communications modules and applications. The role of this PC might be, for example, to communicate with SIMATIC S7 devices and perform process control tasks. The term “run–time station” is also used to describe such PCs equipped with run–time software.
The PC station is configured for communication with SIMATIC S7 devices in SIMATIC NCM PC / STEP 7.
The required run–time software is available on the PC station after installing APC (Advanced PC Configuration).

STEP 7 Project

A STEP 7 Project is created with SIMATIC NCM PC or with STEP 7/NCM. It contains the project and configuration data that can be downloaded to S7 stations and PC stations.

❑

Overview

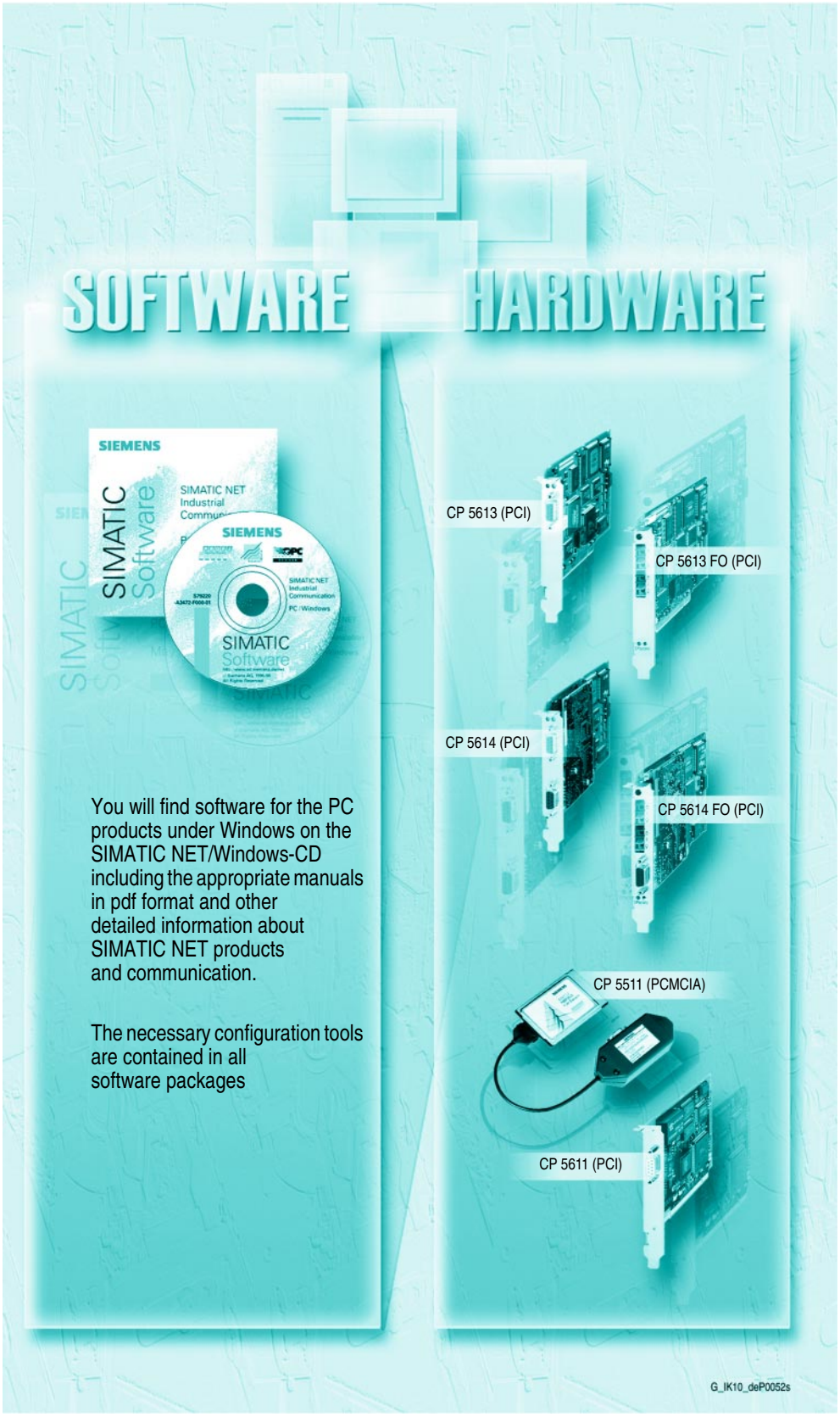


Fig. 3/102 System interfacing for PG/PC

PC card with its own microprocessor

Recommended solution for:

- PC-based control systems (Soft Control, PLC, Numeric Control, Robot Control)
- Process control systems
- Human Machine Interface (HMI)
- PROFIBUS systems with a large quantity framework (more than 8 stations)
- Multi-protocol operation
- Use of several CPs in one computer
- Versions with Fiber Optic interface (FO)

PC card without its own microprocessor

Recommended solution for:

- Configuration tools (e.g. STEP 7)
- PROFIBUS-DP diagnostics station (e.g. with COM PROFIBUS or as a DP master class 2)
- PROFIBUS-DP slave connection
- PROFIBUS systems with up to 8 stations
- Monoprotocol mode

Performance of the PROFIBUS-CP

The maximum data throughput indicates how many digital input/output files can be read or written to or from the PROFIBUS application in 1 ms via the applicable PROFIBUS-CP (regardless of the physical characteristics of the bus).

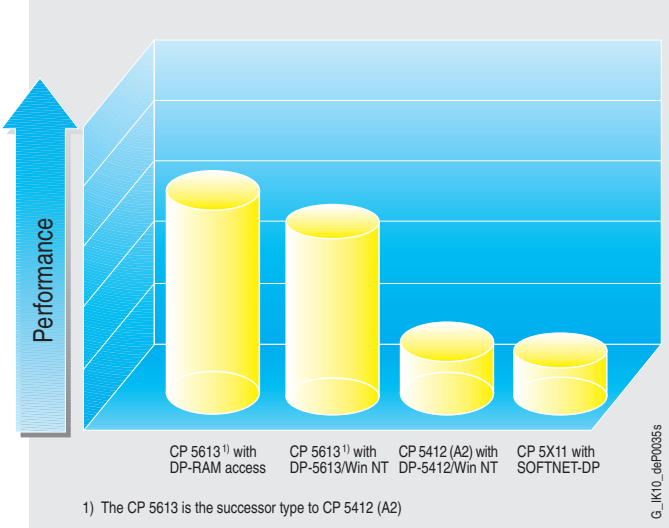


Fig. 3/103 Performance in the case of almost equal CPU loading

CPU loading and access time

A comparison of event access (via Interrupt) and polling access shows that the CPU loading in CP 5613 can be reduced considerably using the event/filter mechanism; at the same data throughput.

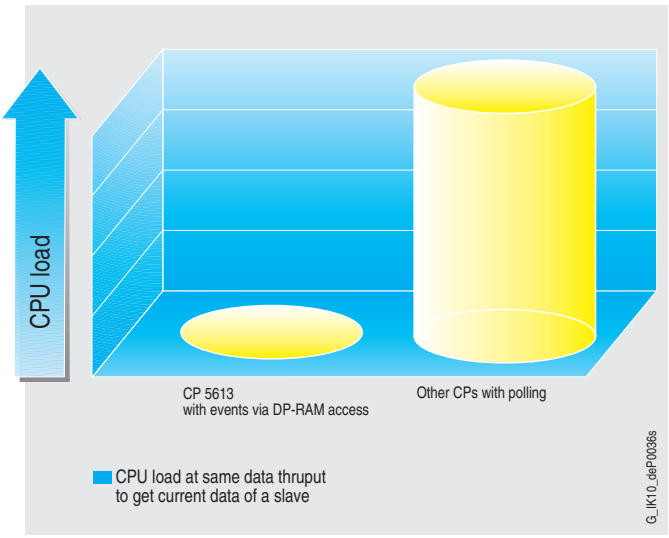


Fig. 3/104 Comparison of CPU loading for event/polling access

Performance data of the PROFIBUS-CP

		CP 5613/CP 5613 FO	CP 5614/CP 5614 FO	CP 5412 (A2)	CP 5611	CP 5511
Number of connectable DP slaves	max.	122	122	64	60	60
No. of parallel FDL tasks to be processed	max.	120	120	118	100	32
No. of PG/OP and S7 connections	max.	50[1)]	50[1)]	29	8	8
No. of FMS connections	max.	40[2)]	40[2)]	32	–	–

Note:
The CP 5613 is the successor type to CP 5412 (A2)
1) for credit = 1; PDU size ≤ 480 bytes
2) for credit = 1

OPC server

Overview

- OPC servers are supplied with the communication software
- Standard, open, manufacturer-independent interface
- Interfacing of OPC-capable Windows applications to S7 communication and S5-compatible communication (SEND/RECEIVE).
- Builds upon software programming interfaces.
- Efficient data exchange for Windows NT 4.0 and Windows 2000 Pro
- OPC-Scout with Browser function as OPC-Client and OCX-Data-Control (only S7-OPC server)

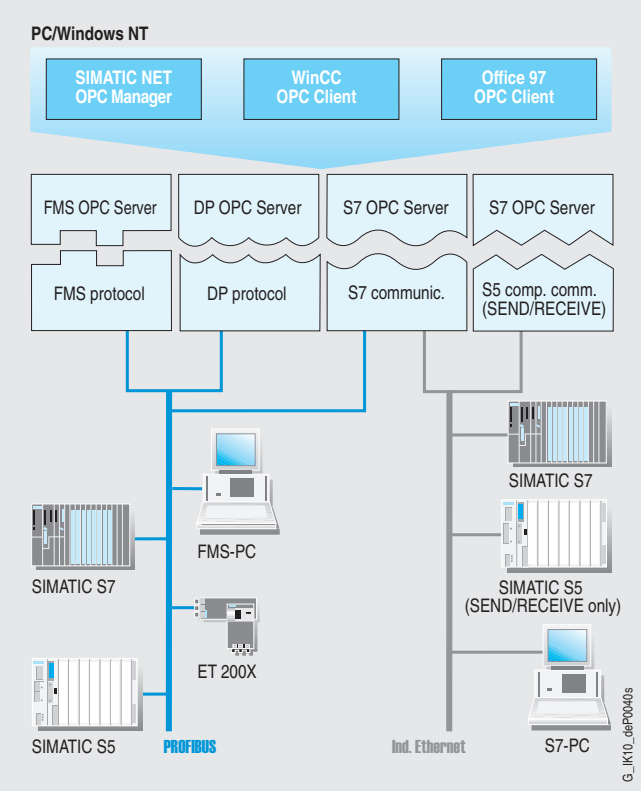


Fig. 3/105 System integration with OPC server

Application

Under Windows NT, OPC (OLE for Process Control) can be used as an extension to the communications interfaces COM (Component Object Model) and DCOM (Distributed COM) for the user software.

The basic principle of OPC is that OPC client applications can communicate with the OPC server through a standard / open and thus manufacturer-independent interface.

Connection to OPC-compatible Windows applications already on the market (Office 97 or HMI systems) is possible.

The following OPC servers are available:

PROFIBUS:

- DP-OPC server for PROFIBUS-DP
- FMS-OPC server for PROFIBUS-FMS
- S7-OPC servers for S7 communication, alarms and events as well as S5-compatible communication (SEND/RECEIVE)

The OPC servers have:

- Standardized access to SIMATIC S7 and SIMATIC S5 for OPC-compatible applications under Windows NT
- Consistency between automation products from different manufacturers
- The same simple-to-use user interface for different components.
- Accessibility from every computer in the LAN/WAN
- High-performance data access via the Custom Interface (C++)
- Easy to use via the "Automation Interface" (VB) or OCX Data Control (S7 and FMS-OPC server only), which is supplied.
- Grouping of variables (items), whereby a large number of data can be processed in a short time

Functions

- Open standardization of addressing using logical names for objects of an automation component or system.
- Support of symbols from STEP 7
- Efficient data exchange from a process component to a further processing application
- Simultaneous use of several servers by one client application
- Several clients can run on one OPC server at the same time
- Server-specific configuration support

Functions
(continued)

- Interfaces
  - "Custom Interface" for high-performance C++ applications
  - "Automation Interface" for easy-to-create Visual Basic or similar applications
  - OCX Data Control for embedding directly in COM/ DCOM compatible Windows applications (S7-OPC server and FMS-OPC server only)

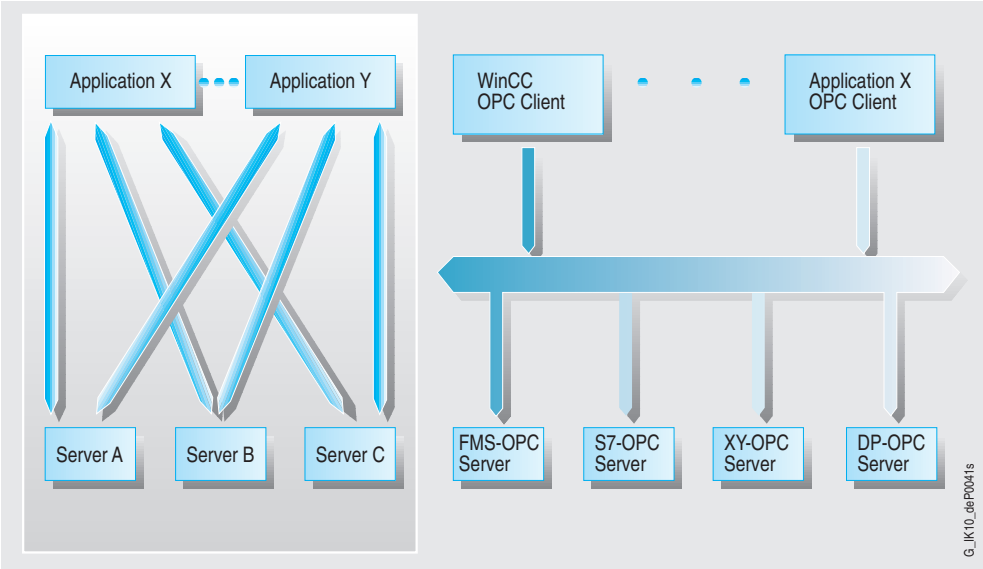


Fig. 3/106 Comparison of conventional client/server architecture with an OPC architecture

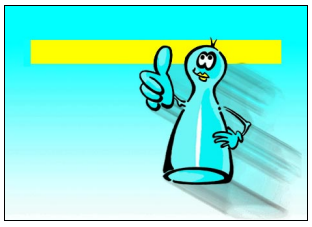
Configuration

The communications parameters can be completely configured using the tools in the software which is already installed.

The following demo programs are supplied as standard:

- For custom interface in C++
- For "Automation Interface" with Visual Basic

Designed for Industry



- Simple use of different networks and protocols through standard interface.
- Reduced training and learning requirements.
- Easy integration in the system environment and office applications via C++ and Visual Basic interface
- Short programming times for applications.
- Easy to handle and cost-effective because the OPC servers are supplied with the communication software

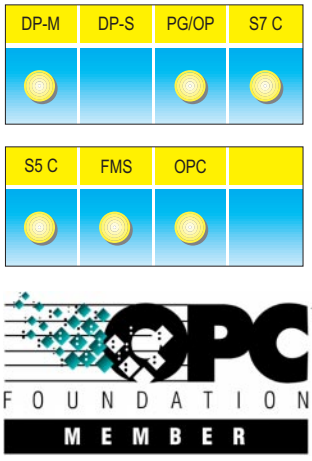
Technical specifications – OPC server

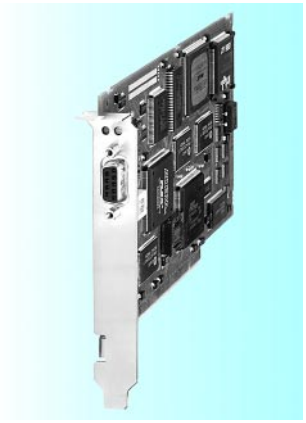
Programming	• Open and standardized • Can be used with different manufacturers' systems • Variable (item) groups
Access to	• One set of variables, enabling processing of large data volumes in a short time
Interfaces	• Custom Interface (C++); OPC is therefore powerful • Automation Interface (VB, Excel, Access, Delphi, etc.); therefore easy to use • Graphics with OCX; allowing configuration instead of programming
Protocols	• DP protocol • S7 communication • FMS protocol • S5-compatible communication (SEND/RECEIVE)
Availability	• Windows NT 4.0, 2000 Professional is automatically available for all applications after installation

Product versions

Product	contains OPC servers for:
DP-5613	PROFIBUS-DP
S7-5613	S7 communication
FMS-5613	FMS communication
SOFTNET-S7 for PROFIBUS	S7 communication
SOFTNET-DP	PROFIBUS-DP
SOFTNET-DP slave	PROFIBUS-DP slave
CP 5613/5614 and CP 5613 FO/5614 FO with DP-Base software	S5 compatible communication (FDL) PROFIBUS-DP (master) (in preparation) Access to DP slave of the CP 5614 (in preparation)

Overview





- PCI card with microprocessor for system interfacing for PCs and SIMATIC programming devices/PC to PROFIBUS up to 12 Mbit/s
- Communication services:
  - PROFIBUS-DP master according to IEC 61158/ EN 50170
  - PG/OP communication with STEP 5 and STEP 7.
  - S7 communication
  - S5-compatible communication (SEND/RECEIVE) on the basis of the FDL interface
  - PROFIBUS-FMS according to IEC 61158/ EN 50170
- Extensive diagnostic facilities for installation, commissioning and operation of the module
- High performance via direct Dual Port-RAM-access
- Event and filter mechanism for relieving the host CPU.
- OPC servers are supplied with the communication software

Application

The CP 5613 enables connection to PROFIBUS for SIMATIC PG/PC and PCs with PCI slot under Windows NT 4.0 and Windows 2000 Professional.

The CP 5613 provides high performance support for control tasks on the PC (e.g. PC-based control, numeric control, robot control).

Design

- Short PCI card
- 9-pin Sub-D socket for connecting to PROFIBUS
- Diagnostic LEDs.
- Parallel operation of max. 4 CPs[1)]

The module is installed via PCI standard mechanisms (plug & play).

1) FMS-5613 supports a maximum 2 CP 5613/5614.

It is connected to the electrical PROFIBUS by

- bus connector and PROFIBUS bus cable or
- bus terminal (e.g. 12M bus terminal) and PROFIBUS bus cable.

It is connected to the optical PROFIBUS by:

- bus cable with 2 bus connectors or
- 830-1T PROFIBUS connecting cable

to an OLM.

It is connected to the optical PROFIBUS with integrated interface and OBT by:

- bus cable with 2 bus connectors or
- 830-1T PROFIBUS connecting cable

to an optical bus terminal (OBT) for PROFIBUS-DP.

Direct connection to the optical PROFIBUS with integrated interface by CP 5613 FO.

Functions

PROFIBUS-DP

Access to process data with DP-Base

The CP 5613 is operated as a PROFIBUS-DP master module which holds the process image (input/output and diagnostic data) in the Dual Port-RAM (memory area on the CP). The high-performance data exchange with the PROFIBUS slaves is handled independently by the CP 5613 hardware.
The user has direct access to the Dual Port-RAM.

The process data of the slaves are always consistent, i.e. the user gets the data from one and the same DP cycle.

Parallel operation of DP-Base and DP 5613 software is not possible.

Event/filter mechanism

The user receives up-to-date data via two access mechanisms:

- Cyclic polling of the DP slaves (higher load on host CPU)
- Signalling by new kind of event/filter mode in the event of changes in the input data of a slave (minimum load on host CPU)

Both alternatives can be combined. Optimum utilization of the PC is therefore possible for the application in question.

The new event/filter mechanism can be used additionally for

- Signalling by Interrupt for diagnostic messages from slaves
- In equidistant mode signalling by interrupt:
  - Start DP cycle
  - End of cyclic data exchange with the DP slaves (from hardware version 3, in preparation)

Equidistant mode settable as of STEP 7 V5.1

Functions
(continued)

FastLogic
(rapid shutdown)

FastLogic means that the CP 5613 can react automatically to up to 4 plant states. A fast response time and independence of the host application is achieved here, for example, for rapid equipment shutdown.

DP programming interface

The DP programming interface (DP-Base) of the CP 5613 has the following functions:

- DP master class 1 including acyclic DP extensions.
- DP master class 2 (in preparation) incl. acyclic expansions

Access to the process data is directly through the Dual Port-RAM. The Dual Port-RAM interface not only offers fast access as a DP master but also a basis for portability to other operating system environments (e.g. VXWorks, QNX, RMOS).

Via a library (DP_BASE.DLL), administrative functional calls (initialization and management services) are offered.

Development Kit DK-5613

The Development Kit DK-5613 offers access to the functions DP master class 1 including non-cyclic DP expansions

With the software development kit DK-5613 the communication processors CP 5613 and CP 5614 can be integrated in any operating system environments. The kit contains the necessary source code including the descriptions in PDF format and can be downloaded from Internet.

Access to process data with DP-5613

The user interface is compatible with software package DP-5412.

- DP master class 1

The CP 5613 operates as a DP master class 1 according to IEC 61158/EN 50170 and handles data transfer with the distributed stations (DP slaves) completely independently. In a fixed, repetitive message cycle, the central controller exchanges information with the DP slaves (e.g. ET 200S). The DP programming interface (DPLib.DLL) provides the PC programmer with function calls for data transfer. In addition, the DP interface offers the functions SYNC and FREEZE as well as the activation and deactivation of slaves.

The DP functional expansions with respect to master class 1 enable non-cyclic read and write functions (DS_READ, DS_WRITE) as well as alarm acknowledgement (ALARM_ACK) to be performed parallel to cyclic data traffic. The non-cyclic transmitted data (e.g. parameterization data) are changed very rarely in comparison with the cyclic measured values and are transmitted with low priority parallel to the fast cyclic useful data transfer. Interrupt acknowledgment in the master ensures reliable transfer of the interrupts from DP slaves (DS_READ, DS_WRITE, DS_DATA_TRANSPORT).

Parallel operation of DP-Base and DP 5613 software is not possible.

- DP master class 2

In addition to DP master class 1 services, the CP 5613 also offers DP master class 2 services in connection with the DP programming interface according to IEC 61158/EN 50170. Devices of this type (programming, configuration or operating devices) are used for commissioning, configuring the DP system or system operation in normal operation (diagnostics). The DP programming interface provides the following services:

- Master diagnostics
- Slave diagnostics
- Read inputs/outputs of a slave
- Reading configuration data and
- Changing the slave address.

The extended DP functions also include non-cyclic access to the parameters and measured values of a slave (e.g. field devices of the process automation, intelligent HMI devices.
This type of slave must be supplied with extensive parameter data during startup and normal operation (DS_READ, DS_WRITE, DS_DATA_TRANSPORT).

Configuration of PROFIBUS-DP takes place with the enclosed COM PROFIBUS PC-Edition.

Software for PG/OP communication

This software enables programming of the SIMATIC S5/S7 controllers via PROFIBUS in connection with STEP 5/STEP 7.
The PG/OP communication for the CP 5613 is already available after installing the CP 5613 (DP-Base). No additional software package is needed.

S5-compatible communication (SEND/RECEIVE based on the FDL interface)

SEND/RECEIVE (FDL interface) is already available after installation of the CP 5613 (DP-Base) and offers data exchange services for diagnostics and management. No additional software package is needed.

Functions (continued)

Software for S7 communication (S7-5613)

The user interface is compatible with software S7-5412.

SIMATIC S7 system components communicate with each other via S7 communication. The S7 programming interface enables PG/PC application programs access to SIMATIC S7 system components. The SIMATIC S7 data can be accessed easily and flexibly.

The following services are available with S7 communication:

Administrative services

- Link management
- Mini database
- Trace.

Data transfer services

- Reading/writing of variables
- BSEND/BRECEIVE (up to 64 Kbytes per task).

Software for PROFIBUS-FMS interface (FMS-5613)

The user interface is compatible with software FMS-5412.

With the FMS programming interface, AT-compatible PCs can exchange data with FMS-capable controllers (e.g. S5/S7) and field devices of other manufacturers. The use of the FMS protocol ensures open communication.

The following services are available via the FMS interface:

- Administrative services
- CRL management services
- FMS connection management services
- Object directory management services for clients and server.
- Variable services for clients and server (read, write, information report).
- Server functionality
- VFD (virtual field device) services for clients and server.
- Bus access information services (live list).
- Trace and mini database

User interfaces

- OPC interface

The OPC server contained in the respective software package can be used as a standard programming interface for the protocols PROFIBUS-DP, S7 communication and PROFIBUS-FMS to connect automation applications to OPC-capable Windows applications (Office, HMI systems etc.).

- Programming interface via C-Library

The programming interfaces for existing applications are implemented as a Dynamic Link Library (DLL). The following compilers can therefore be used in conjunction with the SIMATIC NET products:

- Microsoft Visual C/C++ V6.0
- Microsoft Visual Basic V6.0

For Borland programming interfaces (e.g. DELPHI) partner solutions of AIXO are available.

For solutions for other operating systems, see the Development Kit DK-5613.

The DK-5613 can be found in the Internet.



http://www.ad.siemens.de/net/dk5613

Configuration

For all packages mentioned above, the configuration tools are included in the scope of supply.

The complete configuration of the S7 communication is performed using STEP 7 V5.0 SP3 and higher. The configurations generated for the PCs using STEP 7 are stored in files which are subsequently transferred to the individual PCs.

Configuration of PROFIBUS-DP and FMS takes place with the enclosed COM PROFIBUS PC-Edition.

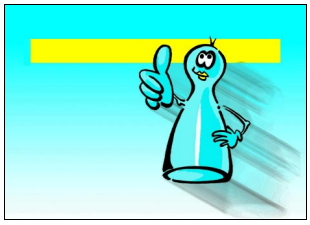
Diagnostics

Extensive diagnostic tools are available (for installation, commissioning and operation) for the module itself and for the PROFIBUS network.

Therefore a PROFIBUS network can be started up quickly and easily with a CP 5613.

CP 5613 communication processor

Designed for Industry



- Fastest possible access to process data via Dual Port-RAM
- Short response time with FastLogic
- Process-consistent data from a DP cycle
- Higher computing performance in the PC by relieving the host CPU.
- Fast commissioning by Plug&Play and diagnostic tools
- Easy portability to other operating systems by a Dual Port-RAM interface
- Can also be used in a high temperature industrial environment.

Technical specifications

Baud Rates		9.6 Kbit/s to 12 Mbit/s
Interfaces		
• Connection to PROFIBUS		9-pin Sub-D socket
Supply voltage (from PCI)		5 V DC ±5%
Power consumption from 5 V		1.3 A
Power loss		6.5 W
Perm. ambient conditions		
• Operating temperature		
– without fan		+5 °C to +40 °C
– with fan (air current 0.5 m/s)		+5 °C to +60 °C
• Transport/storage temperature		–40 °C to +70 °C
• Relative humidity	max.	95% at +25 °C
Design		
• Module format		PCI card
• Dimensions (W × H) in mm		107 × 168
• Weight	approx.	250 g
• Space required		1 × PCI slot
Performance data Single protocol mode		
• Number of connectable DP slaves	max.	122
• No. of parallel FDL tasks to be processed	max.	120
• No. of PG/OP and S7 connections	max.	50 [1]
• No. of FMS connections	max.	40 [2]

1) for credit = 1; PDU size ≤ 480 bytes

2) for credit = 1

Ordering data

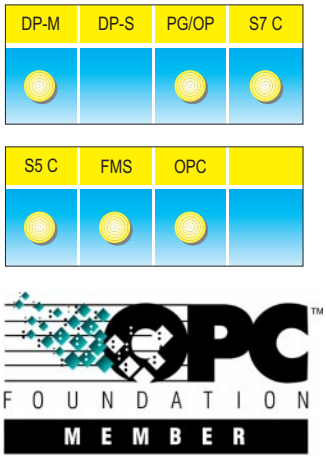
	Order No.
CP 5613 communication processor PCI card for connection to PROFIBUS incl. Windows NT 4.0, 2000 Pro drivers, DP-RAM interface for DP master incl. PG and FDL, configuration software; with electronic manual; on CD-ROM	**6GK1 561-3AA00**
Development Kit DK-5613 Software Development Kit for CP 5613/CP 5614/CP 5613 FO/ CP 5614 FO for integration in any operating system environments on systems with PCI slot Download from Internet under: http://www.ad.siemens.de/net/dk5613	

Ordering data

	Order No.
DP-5613/Windows NT 4.0, 2000 Pro Software V2.1 for DP protocol on CP 5613/CP 5614/CP 5613 FO/ CP 5614 FO, incl. PG, FDL and DP-OPC server, with electronic manual; on CD-ROM, German/English	**6GK1 713-5DB21-3AA0**
S7-5613/Windows NT 4.0, 2000 Pro Software V2.1 for S7 communication on CP 5613/CP 5614/CP 5613 FO/ CP 5614 FO, incl. PG, FDL and S7-OPC server, with electronic manual; on CD-ROM, German/English	**6GK1 713-5CB21-3AA0**
FMS-5613/Windows NT 4.0, 2000 Pro Software V2.1 for FMS protocol on CP 5613/CP 5614/CP 5613 FO/ CP 5614 FO, incl. PG, FDL and FMS-OPC server, with electronic manual; on CD-ROM, German/English	**6GK1 713-5FB21-3AA0**
Manual CP 5613/CP 5614 and SOFTNET for PROFIBUS Including: Description of the interfaces (FMS, DP, S7, FDL), OPC server, configuration tools	
• German	**6GK1 971-5DA00-0AA0**
• English	**6GK1 971-5DA00-0AA1**
PROFIBUS FastConnect RS 485 bus connector Plug 180 With 180° cable outlet	**6GK1 500-0FC00**
PROFIBUS bus terminal 12M Bus terminal for connecting PROFIBUS stations up to 12 Mbit/s with connecting cable	**6GK1 500-0AA10**
SIMATIC NET Software Update Service For Industrial Ethernet, PROFIBUS, OPC server, including manuals, on CD-ROM, German/English	**6GK1 704-0AA00-3AA2**
Electronics manuals Communication systems, protocols, products on CD-ROM German/English	**6GK1 975-1AA00-3AA0**

CP 5613 FO communication processor

Overview





- PCI card with microprocessor for system interfacing for PCs and SIMATIC PUs/PC to the optical PROFIBUS with integrated interface up to 12 Mbit/s
- Integrated FOC interface for direct FO connection
- Communication services:
  - PROFIBUS-DP master according to IEC 61158/ EN 50170
  - PG/OP communication with STEP 5 and STEP 7.
  - S7 communication
  - S5-compatible communication (SEND/RECEIVE) on the basis of the FDL interface
  - PROFIBUS-FMS according to IEC 61158/ EN 50170
- Extensive diagnostic facilities for installation, commissioning and operation of the module
- High performance via direct Dual Port-RAM access
- Event and filter mechanism for relieving the host CPU.
- Multiple protocol operation and parallel operation of up to 4 CPs
- OPC servers are supplied with the communication software

3

Application

The CP 5613 FO enables connection to the optical PROFIBUS with integrated interface for SIMATIC PG/PC and PCs with PCI slot under Windows NT 4.0 and Windows 2000 Professional.

The CP 5613 FO provides high performance support for control tasks on the PC (e.g. PC-based control, numeric control, robot control).

Design

- Short PCI card
- 2 Duplex sockets for connection of plastic and PCF FOCs with 2 simplex plugs each to the optical PROFIBUS
- Connection for external power supply. This means data transmission on the optical line is not interrupted when the PC is switched off.
- Diagnostic LEDs.
- Parallel operation of up to 4 CPs.

The module is installed via PCI standard mechanisms (plug & play).

It is connected to the optical PROFIBUS with integrated interface by:

- Plastic and PCF FOCs with simplex plugs.

It is connected to the electrical PROFIBUS by

- Plastic and PCF-FOC with simplex plugs to an OBT.

Functions

PROFIBUS-DP

Access to process data with DP-Base

The CP 5613 FO is operated as a PROFIBUS-DP master module which holds the process image (input/output and diagnostic data) in the Dual Port-RAM (memory area on the CP). The high-performance data exchange with the PROFIBUS slaves is handled independently by the CP 5613 FO hardware.
The user has direct access to the Dual Port-RAM.

The process data of the slaves are always consistent, i.e. the user gets the data from one and the same DP cycle.

Parallel operation of DP-Base and DP 5613 software is not possible.

Event/filter mechanism

The user receives up-to-date data via two access mechanisms:

- Cyclic polling of the DP slaves (higher load on host CPU)
- Signalling by new kind of event/filter mode in the event of changes in the input data of a slave (minimum load on host CPU)

Both alternatives can be combined. Optimum utilization of the PC is therefore possible for the application in question.

The new event/filter mechanism can also be used for:

- Signalling by Interrupt for diagnostic messages from slaves
- In equidistant mode signalling by interrupt:
  - Start DP cycle
  - End of cyclic data exchange with the DP slaves (from hardware version 3, in preparation)

Equidistant mode settable as of STEP 7 V5.1

Functions
(continued)

FastLogic
(rapid shutdown)

FastLogic means that the CP 5613 FO can react automatically to up to 4 plant states. A fast response time and independence of the host application is achieved here, for example, for rapid equipment shutdown.

DP programming interface

The DP programming interface (DP-Base) of the CP 5613 FO has the following functions:

- DP master class 1 including acyclic DP extensions.
- DP master class 2 (in preparation) incl. acyclic expansions

Access to the process data is directly through the Dual Port-RAM. The Dual Port-RAM interface not only offers fast access as a DP master but also a basis for portability to other operating system environments (e.g. VXWorks, QNX, RMOS).

Via a library (DP_BASE.DLL), administrative functional calls (initialization and management services) are offered.

Development Kit DK-5613

The Development Kit DK-5613 offers access to the functions DP master class 1 including non-cyclic DP expansions

With the software development kit DK-5613 the communication processors CP 5613, CP 5614 and CP 5613 FO/ CP 5614 FO can be integrated in any operating system environments. The kit contains the necessary source code including the descriptions in PDF format and can be downloaded from Internet

Access to process data with DP-5613

The user interface is compatible with software package DP-5412.

- DP master class 1

The CP 5613 FO operates as a DP master class 1 and handles data transfer with the distributed stations (DP slaves) completely independently. In a fixed, repetitive message cycle, the central controller exchanges information with the DP slaves (e.g. ET 200S). The DP programming interface (DPLib.DLL) provides the PC programmer with function calls for data transfer. In addition, the DP interface offers the functions SYNC and FREEZE as well as the activation and deactivation of slaves.

The DP functional expansions with respect to master class 1 enable non-cyclic read and write functions (DS_READ, DS_WRITE) as well as alarm acknowledgement (ALARM_ACK) to be performed parallel to cyclic data traffic. The non-cyclic transmitted data (e.g. parameterization data) are changed very rarely in comparison with the cyclic measured values and are transmitted with low priority parallel to the fast cyclic useful data transfer. Interrupt acknowledgment in the master ensures reliable transfer of the interrupts from DP slaves (DS_READ, DS_WRITE, DS_DATA_TRANSPORT).

Parallel operation of DP-Base and DP 5613 software is not possible.

- DP master class 2

In addition to DP master class 1 services, the CP 5613 FO also offers DP master class 2 services in connection with the DP programming interface according to IEC 61158/EN 50170. Devices of this type (programming, configuration or operating devices) are used for commissioning, configuring the DP system or system operation in normal operation (diagnostics). The DP programming interface provides the following services:

- Master diagnostics
- Slave diagnostics
- Read inputs/outputs of a slave
- Reading configuration data and
- Changing the slave address.

The extended DP functions also include non-cyclic access to the parameters and measured values of a slave (e.g. field devices of the process automation, intelligent HMI devices. This type of slave must be supplied with extensive parameter data during startup and normal operation (DS_READ, DS_WRITE, DS_DATA_TRANSPORT).

Configuration of PROFIBUS-DP takes place with the enclosed COM PROFIBUS PC-Edition.

Software for PG/OP communication

This software enables programming of the SIMATIC S5/S7 controllers via PROFIBUS in connection with STEP 5/STEP 7.
The PG/OP communication for the CP 5613 FO is already available after installing the CP 5613 FO (DP-Base). No additional software package is needed.

S5-compatible communication (SEND/RECEIVE based on the FDL interface)

SEND/RECEIVE (FDL interface) is already available after installation of the CP 5613 FO (DP-Base) and offers data exchange services for diagnostics and management. No additional software package is needed.

Functions
(continued)

Software for S7 communication (S7-5613)

The user interface is compatible with software S7-5412.

SIMATIC S7 system components communicate with each other via S7 communication. The S7 programming interface enables PG/PC application programs access to SIMATIC S7 system components. The SIMATIC S7 data can be accessed easily and flexibly.

The following services are available with S7 communication:

Administrative services

- Link management
- Mini database
- Trace.

Data transfer services

- Reading/writing of variables
- BSEND/BRECEIVE (up to 64 Kbytes per task).

Software for PROFIBUS-FMS interface (FMS-5613)

The user interface is compatible with software FMS-5412.

With the FMS programming interface, AT-compatible PCs can exchange data with FMS-capable controllers (e.g. S5/S7) and field devices of other manufacturers. The use of the FMS protocol ensures open communication.

The following services are available via the FMS interface:

- Administrative services
- CRL management services
- FMS connection management services
- Object directory management services for clients and server.
- Variable services for clients and server (read, write, information report).
- Server functionality
- VFD (virtual field device) services for clients and server.
- Bus access information services (live list).
- Trace and mini database

User interfaces

- OPC interface

The OPC server contained in the respective software package can be used as a standard programming interface for the protocols PROFIBUS-DP, S7 communication and PROFIBUS-FMS to connect automation applications to OPC-capable Windows applications (Office, HMI systems etc.).

- Programming interface via C-Library

The programming interfaces for existing applications are implemented as a Dynamic Link Library (DLL). The following compilers can therefore be used in conjunction with the SIMATIC NET products:

- Microsoft Visual C/C++ V6.0
- Microsoft Visual Basic V6.0

For Borland programming interfaces (e.g. DELPHI) partner solutions of AIXO are available.

For solutions for other operating systems, see the Development Kit DK-5613.

The DK-5613 can be found in Internet.



http://www.ad.siemens.de/net/dk5613

Configuration

For all packages mentioned above, the configuration tools are included in the scope of supply.

The complete configuration of the S7 communication is performed using STEP 7 V5.1 and higher.

The configurations generated for the PCs using STEP 7 are stored in files which are subsequently transferred to the individual PCs.

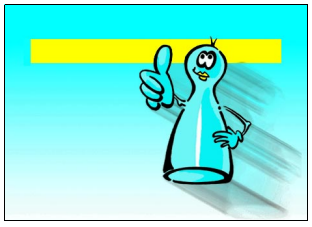
Configuration of PROFIBUS-DP and FMS takes place with the enclosed COM PROFIBUS PC-Edition.

Diagnostics

Extensive diagnostic tools are available (for installation, commissioning and operation) for the module itself and for the PROFIBUS network.

Therefore a PROFIBUS network can be started up quickly and easily with a CP 5613 FO.

Designed for Industry



- Fastest possible access to process data via Dual Port-RAM
- Short response time with FastLogic
- Process-consistent data from a DP cycle
- Direct connection to the optical PROFIBUS by integrated FOC interface
- Higher computing performance in the PC by relieving the host CPU.
- Fast commissioning by Plug&Play and diagnostic tools
- Easy portability to other operating systems by a Dual Port-RAM interface
- Can also be used in a high temperature industrial environment.

CP 5613 FO communication processor

Technical specifications

Baud Rates		9.6 Kbit/s to 12 Mbit/s
Interfaces		
• Connection to PROFIBUS		2 × Duplex socket (FO)
• External power supply (optical) via standard external power supply		Low voltage socket 3.5 mm/1.3 mm ±•)=
Supply voltage from PCI		5 V DC ±5% 12 V DC ±5%
Current consumption		
• from 5 V DC		1.4 A
• from 12 V DC		0.3 A
Power loss		7 W
Supply voltage (optional) external power supply		9 –12 V DC
• Current consumption		0.4 A
• Power loss		3.6 – 4.8 W
Perm. ambient conditions		
• Operating temperature		
– without fan		+5 °C to +40 °C
– with fan (air current 0.5 m/s)		+5 °C to +60 °C
• Transport/storage temperature		–40 °C to +70 °C
• Relative humidity	max.	95% at +25 °C
Design		
• Module format		PCI card
• Dimensions (W × H) in mm		107 × 168
• Weight	approx.	250 g
• Space required		1 × PCI slot
Performance data Single protocol mode		
• Number of connectable DP slaves	max.	122
• No. of parallel FDL tasks to be processed	max.	120
• No. of PG/OP and S7 connections	max.	50 1)
• No. of FMS connections	max.	40 2)

1) for credit = 1; PDU size ≤ 480 bytes
2) for credit = 1

Ordering data

	Order No.
CP 5613 FO communication processor PCI card for connection to PROFIBUS incl. Windows NT 4.0, 2000 Pro drivers, DP-RAM interface for DP master incl. PG and FDL, configuration software; with electronic manual; on CD-ROM	**6GK1 561-3FA00**
Development Kit 1) **DK-5613** Software Development Kit for CP 5613/CP 5614 for integration in any operating system environments on systems with PCI slot	
DP-5613/Windows NT 4.0, 2000 Pro Software V2.1 for DP protocol on CP 5613/CP 5614/CP 5613 FO/ CP 5614 FO, incl. PG, FDL and DP-OPC server, with electronic manual; on CD-ROM, German/English	**6GK1 713-5DB21-3AA0**
S7-5613/Windows NT 4.0, 2000 Pro Software V2.1 for S7 communication on CP 5613/CP5614/CP 5613 FO/ CP 5614 FO, incl. PG, FDL and S7-OPC server, with electronic manual; on CD-ROM, German/English	**6GK1 713-5CB21-3AA0**
FMS-5613/Windows NT 4.0, 2000 Pro Software V2.1 for FMS protocol on CP 5613/CP5614/CP 5613 FO/ CP 5614 FO, incl. PG, FDL and FMS-OPC server, with electronic manual; on CD-ROM, German/English	**6GK1 713-5FB21-3AA0**
Manual CP 5613/CP 5614 and SOFTNET for PROFIBUS Including: Description of the interfaces (FMS, DP, S7, FDL), OPC server, configuration tools	
• German	**6GK1 971-5DA00-0AA0**
• English	**6GK1 971-5DA00-0AA1**
SIMATIC NET Software Update Service For Industrial Ethernet, PROFIBUS, OPC server, including manuals, on CD-ROM, German/English	**6GK1 704-0AA00-3AA2**
Electronic manuals Communication systems, protocols, products on CD-ROM German/English	**6GK1 975-1AA00-3AA0**

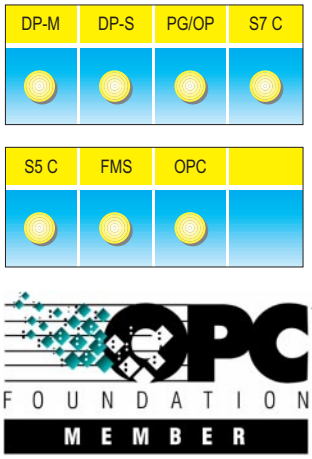
1) Download from Internet under:



http://www.ad.siemens.de/net/dk5613

CP 5614 communication processor

Overview





- PCI card with microprocessor for system interfacing for PCs and SIMATIC programming devices/IPC to PROFIBUS up to 12 Mbit/s
- Communication services:
  - PROFIBUS-DP master interface according to IEC 61158/EN 50170 on a PCI card
  - PROFIBUS-DP slave interface according to IEC 61158/EN 50170 on a PCI card
  - PG/OP communication with STEP 5 and STEP 7.
  - S7 communication
  - S5-compatible communication (SEND/RECEIVE) on the basis of the FDL interface
  - PROFIBUS-FMS according to IEC 61158/EN 50170
- High performance via direct Dual Port RAM access
- Event and filter mechanism for relieving the host CPU.
- OPC servers are supplied with the communication software

Application

The CP 5614 enables connection to PROFIBUS for SIMATIC PG/PC and PCs with PCI slot under Windows NT 4.0 and Windows 2000 Professional. It can be either a DP master or a DP slave independently of each other.

This means that two different PROFIBUS networks can be connected to a PC in a hierarchic structure using one PROFIBUS card and data can be exchanged between the networks.

The CP 5614 provides high performance support for control tasks on the PC (e.g. PC based control, numeric control, robot control).

Design

- Short PCI card
- 2 × 9-pin Sub-D sockets for connecting to PROFIBUS
- Diagnostic LEDs.
- Parallel operation of up to 4 CPs.

The module is installed via PCI standard mechanisms (plug & play).

It is connected to the electrical PROFIBUS by

- bus connector and PROFIBUS bus cable or
- bus terminal (e.g. 12M bus terminal) and PROFIBUS bus cable.

It is connected to the optical PROFIBUS by

- bus cable with 2 bus connectors or
- 830-1T PROFIBUS connecting cable

to an OLM.

It is connected to the optical PROFIBUS with integrated interface and OBT by:

- bus cable with 2 bus connectors or
- 830-1T PROFIBUS connecting cable

to an optical bus terminal (OBT) for PROFIBUS.

Direct connection to the optical PROFIBUS with integrated interface by CP 5614 FO.

Functions

PROFIBUS-DP

Access to process data

The CP 5614 is operated as a PROFIBUS-DP master and DP slave module which holds the process image (input/output and diagnostic data) in the Dual Port-RAM. The high-performance data exchange with the PROFIBUS slaves is handled independently by the CP 5614 FO hardware. The user has direct access to the Dual Port-RAM. The process data of the slaves are always consistent, i.e. the user gets the data from one and the same DP cycle.

Parallel operation of DP 5613 (DP master) and DP-Base (DP master, DP slave) is not possible.

Event/filter mechanism

The user receives up-to-date data via two access mechanisms:

- Cyclic polling of the DP slaves (higher load on host CPU)
- Signalling by new kind of event/filter mode in the event of changes in the input data of a slave (minimum load on host CPU)

Both alternatives can be combined. Optimum utilization of the PC is therefore possible for the application in question.

The new event/filter mechanism can also be used for:

- Signalling by Interrupt for diagnostic messages from slaves
- In equidistant mode signalling by interrupt:
  - Start DP cycle
  - End of cyclic data exchange with the DP slaves (from hardware version 3, in preparation)

Equidistant mode settable as of STEP 7 V5.1

Functions
(continued)

FastLogic
(rapid shutdown)

FastLogic means that the CP 5614 can react automatically to up to 4 plant states. A fast response time and independence of the host application is achieved here e.g. fast switch off of devices.

DP programming interface

The DP programming interfaces of the CP 5613 and CP 5614 are identical.

The DP programming interface of the CP 5614 has the following functional scope:

- DP slave
- DP master class 1
  Including acyclic DP extensions.
- DP master class 2
  (in preparation)
  incl. non-cyclic DP expansions

Access to the process data is directly through the Dual Port-RAM. The Dual Port-RAM interface not only offers fast access as a DP master/slave but also a basis for portability to other operating system environments (e.g. VXWorks, QNX, RMOS).

A DP master and a DP slave library (DP_BASE.DLL or DPS_BASE.DLL) offer administrative function calls (initialization and management services as well as diagnostic functions).

A transfer mechanism (application in the PC) can be set by software as a link for data exchange between the master and slave interface.

In this manner, defined I/O data can be transferred between the master interface and the slave interface.

The two connected PROFIBUS networks can be operated with different PROFIBUS bus parameters due to their mutual independence.

Development Kit DK-5613

The Development Kit DK-5613 offers access to the functions DP master class 1 including non-cyclic DP expansions

With the software development kit DK-5613 the communication processors CP 5613 and CP 5614 can be integrated in any operating system environments. The kit contains the necessary source code including the descriptions in PDF format and can be downloaded from Internet

Access to process data with DP-5613

The user interface is compatible with software package DP-5412.

- DP master class 1

The CP 5614 operates as a DP master class 1 according to IEC 61158/EN 50170 and handles data transfer with the distributed stations (DP slaves) completely independently. In a fixed, repetitive message cycle, the central controller exchanges information with the DP slaves (e.g. ET 200S). The DP programming interface (DPLib.DLL) provides the PC programmer with function calls for data transfer. In addition, the DP interface offers the functions SYNC and FREEZE as well as the activation and deactivation of slaves.

The DP functional expansions with respect to master class 1 enable non-cyclic read and write functions (DS_READ, DS_WRITE) as well as alarm acknowledgement (ALARM_ACK) to be performed parallel to cyclic data traffic. The non-cyclic transmitted data (e.g. parameterization data) are changed very rarely in comparison with the cyclic measured values and are transmitted with low priority parallel to the fast cyclic useful data transfer. Interrupt acknowledgment in the master ensures reliable transfer of the interrupts from DP slaves (DS_READ, DS_WRITE, DS_DATA_TRANSPORT).

Parallel operation of DP-Base and DP 5613 software is not possible.

- DP master class 2

In addition to DP master class 1 services, the CP 5614 also offers DP master class 2 services in connection with the DP programming interface according to IEC 61158/EN 50170. Devices of this type (programming, configuration or operating devices) are used for commissioning, configuring the DP system or system operation in normal operation (diagnostics)

The DP programming interface provides the following services:

- Master diagnostics
- Slave diagnostics
- Read inputs/outputs of a slave
- Reading configuration data and
- Changing the slave address.

The extended DP functions also include non-cyclic access to the parameters and measured values of a slave (e.g. field devices of the process automation, intelligent HMI devices).
This type of slave has to be supplied with extensive parameter data during startup and normal operation. (DS_READ, DS_WRITE, DS_DATA_TRANSPORT).

Configuration of PROFIBUS-DP takes place with the enclosed COM PROFIBUS PC-Edition.

Functions
(continued)

Software for PG/OP communication

This software enables programming of the SIMATIC S5/S7 controllers via PROFIBUS in connection with STEP 5/STEP 7.
The PG/OP communication for the CP 5614 is already available after installing the CP 5614 (DP-Base). No additional software package is needed.

S5-compatible communication (SEND/RECEIVE based on the FDL interface)

SEND/RECEIVE (FDL interface) is already available after installation of the CP 5614 (DP-Base) and offers data exchange services for diagnostics and management. No additional software package is needed.

Software for S7 communication (S7-5613)

The user interface is compatible with S7-5412.

SIMATIC S7 system components communicate with each other via S7 communication. The S7 programming interface enables PG/PC application programs access to SIMATIC S7 system components. The SIMATIC S7 data can be accessed easily and flexibly.

The following services are available with S7 communication:

Administrative services

- Link management
- Mini database
- Trace.

Data transfer services

- Reading/writing of variables

BSEND/BRECEIVE
(up to 64 Kbytes per task).

Software for PROFIBUS-FMS interface (FMS-5613)

The user interface is compatible with software FMS-5412.

With the FMS programming interface, AT-compatible PCs can exchange data with FMS-capable controllers (e.g. S5/S7) and field devices of other manufacturers. The use of the FMS protocol ensures open communication.

The following services are available via the FMS interface:

- Administrative services
- CRL management services
- FMS connection management services
- Object directory management services for clients and server.
- Variable services for clients and server (read, write, information report).
- Server functionality
- VFD (virtual field device) services for clients and server.
- Bus access information services (live list).

  Trace and mini database

User interfaces

- OPC interface

The OPC server contained in the respective software package can be used as a standard programming interface for the protocols PROFIBUS-DP, S7 communication and PROFIBUS-FMS to connect automation applications to OPC-capable Windows applications (Office, HMI systems etc.).

- Programming interface via C-Library

The programming interfaces for existing applications are implemented as a Dynamic Link Library (DLL). The following compilers can therefore be used in conjunction with the SIMATIC NET products:

- Microsoft Visual C/C++ V6.0
- Microsoft Visual Basic V6.0

For Borland programming interfaces (e.g. DELPHI) partner solutions of AIXO are available.

For solutions for other operating systems, see the Development Kit DK-5613.

The DK-5613
can be found in the Internet.



http://www.ad.siemens.de/net/dk5613

Configuration

For all packages mentioned above, the configuration tools are included in the scope of supply.

The complete configuration of the S7 communication is performed using STEP 7 V5.0 SP3 and higher. The configurations generated for the PCs using STEP 7 are stored in files which are subsequently transferred to the individual PCs.

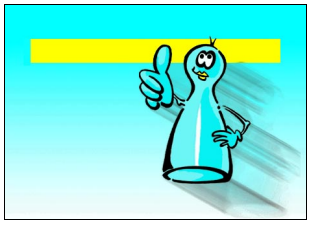
Configuration of PROFIBUS-DP and FMS takes place with the enclosed COM PROFIBUS PC-Edition.

Diagnostics

Extensive diagnostic tools are available (for installation, commissioning and operation) for the module itself and for the PROFIBUS network.

Therefore a PROFIBUS network can be started up quickly and easily with a CP 5614.

Designed for Industry



- Only 1 slot is required for a master and slave.
- Fastest possible access to process data via Dual Port-RAM
- Short response time with FastLogic
- Process-consistent data from a DP cycle
- Higher computing performance in the PC by relieving the host CPU.
- Fast commissioning by Plug&Play and diagnostic tools
- Easy portability to other operating systems by a Dual Port-RAM interface
- Can also be used in a high temperature industrial environment.

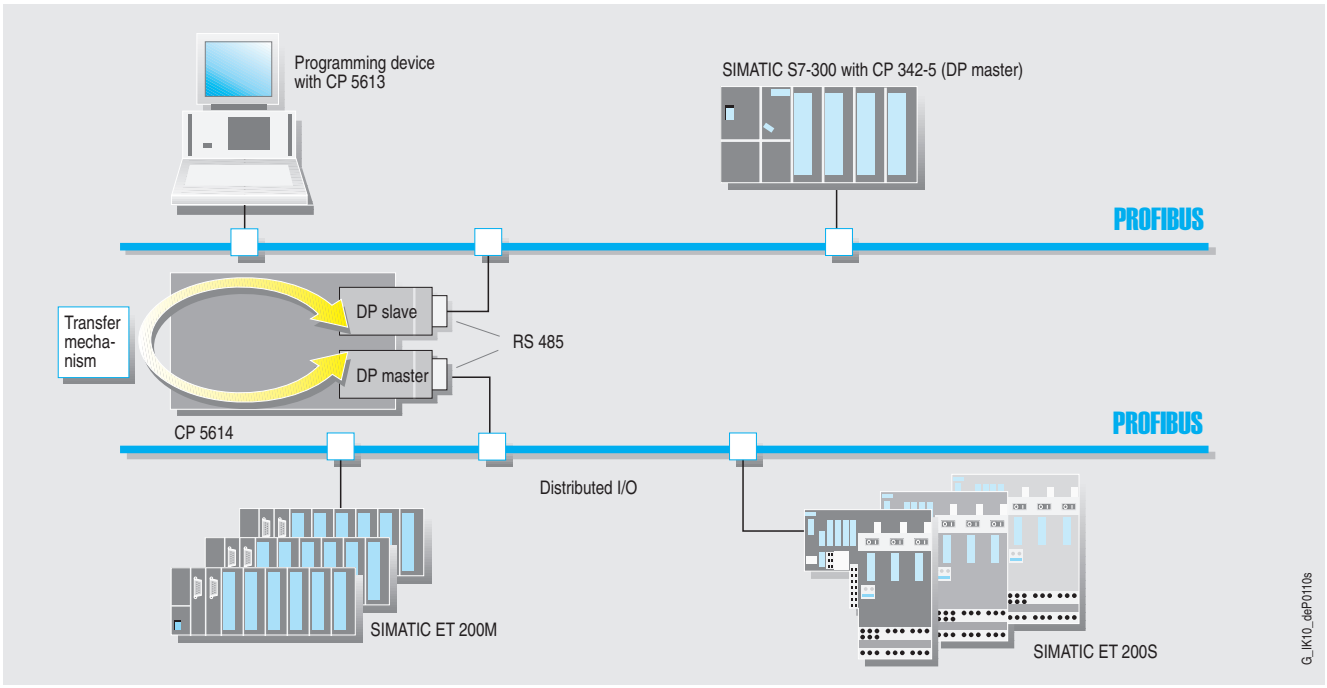


Fig. 3/107 Configuration example with CP 5614

Technical specifications

Baud Rates		9.6 Kbit/s to 12 Mbit/s
Interfaces, connection		
• PROFIBUS-DP master		9-pin Sub-D socket
• PROFIBUS-DP slave		9-pin Sub-D socket
Supply voltage (from PCI)		5 V DC, ±5%
Current consumption from 5 V DC	approx.	1.6 A
Power loss	approx.	8.0 W
Perm. ambient conditions		
• Operating temperature		
– without fan		+5 °C to +40 °C
– with fan (air current 0.5 m/s)		+5 °C to +60 °C
• Transport/storage temperature		–40 °C to +70 °C
• Relative humidity	max.	95% at +25 °C
Design		
• Module format		PCI card
• Dimensions (W × H) in mm		107 × 168
• Weight	approx.	300 g
• Space required		1 × PCI slot
Performance data Single protocol mode		
• Number of connectable DP slaves	max.	122
• Data area of slave interface: input data, output data, diagnostics data		244 bytes each
• No. of parallel FDL tasks to be processed	max.	120
• No. of PG/OP and S7 connections	max.	50 [1]
• No. of FMS connections	max.	40[2]

1) for credit = 1; PDU size ≤ 480 bytes

2) for credit = 1

Ordering data

Order No.

Communication processor CP 5614
PCI card with master and slave connection to PROFIBUS, incl. Windows NT 4.0, 2000 Pro drivers, DP-RAM Interface for DP master and slave, PG and FDL, configuration software with electronic manual on CD-ROM
6GK1 561-4AA00

Development Kit [1]
DK-5613
Software Development Kit for CP 5613/CP 5614 for integration in any operating system environments on systems with PCI slot

1) Download from Internet under:



http://www.ad.siemens.de/net/dk5613

Ordering data

Order No.

DP-5613/Windows NT 4.0, 2000 Pro
Software V2.1 for DP protocol on CP 5613/CP 5614/CP 5613 FO/ CP 5614 FO, incl. PG, FDL and DP-OPC server, with electronic manual; on CD-ROM, German/English
6GK1 713-5DB21-3AA0

S7-5613/Windows NT 4.0, 2000 Pro
Software V2.1 for S7 communication on CP 5613/CP5614/CP 5613 FO/ CP 5614 FO, incl. PG, FDL and S7-OPC server, with electronic manual; on CD-ROM, German/English
6GK1 713-5CB21-3AA0

FMS-5613/Windows NT 4.0, 2000 Pro
Software V2.1 for FMS protocol on CP 5613/CP5614/CP 5613 FO/ CP 5614 FO, incl. PG, FDL and FMS-OPC server, with electronic manual; on CD-ROM, German/English
6GK1 713-5FB21-3AA0

Manual CP 5613/CP 5614 and SOFTNET for PROFIBUS
Including: Description of the interfaces (FMS, DP, S7, FDL), OPC server, configuration tools

- German **6GK1 971-5DA00-0AA0**
- English **6GK1 971-5DA00-0AA1**

PROFIBUS FastConnect RS 485 bus connector Plug 180
With 180° cable outlet
6GK1 500-0FC00

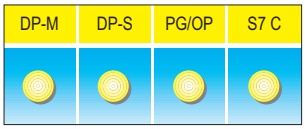
PROFIBUS bus terminal 12M
Bus terminal for connecting PROFIBUS stations up to 12 Mbit/s with connecting cable
6GK1 500-0AA10

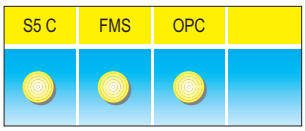
SIMATIC NET Software Update Service
For Industrial Ethernet, PROFIBUS, OPC server
Including manuals, on CD-ROM, German/English
6GK1 704-0AA00-3AA2

Electronic manuals
Communication systems, protocols, products
on CD-ROM
German/English
6GK1 975-1AA00-3AA0

CP 5614 FO communication processor

Overview









- PCI card with microprocessor for system interfacing for PCs and SIMATIC PUs/PC to the optical PROFIBUS with integrated interface up to 12 Mbit/s
- Integrated FOC interface for direct FO connection
- Communication services:
  - PROFIBUS-DP master interface according to IEC 61158/EN 50170 on a PCI card
  - PROFIBUS-DP slave interface according to IEC 61158/EN 50170 on a PCI card
  - PG/OP communication with STEP 5 and STEP 7.
  - S7 communication
  - S5-compatible communication (SEND/RECEIVE) on the basis of the FDL interface
  - PROFIBUS-FMS according to IEC 61158/EN 50170
- High performance via direct Dual Port RAM access
- Event and filter mechanism for relieving the host CPU.
- Multiple protocol operation and parallel operation of up to 4 CPs
- OPC servers are supplied with the communication software

Application

The CP 5614 FO enables connection to PROFIBUS-DP for SIMATIC PG/PC and AT-compatible PCs with PCI slot under Windows NT 4.0 and Windows 2000 Professional.

It can be either a DP master or a DP slave independently of each other. In this way two different PROFIBUS networks can be connected in a hierarchical structure to one PC with a PROFIBUS card and can exchange data.

The CP 5614 FO provides high performance support for control tasks on the PC (e.g. PC-based control, numeric control, robot control).

Design

- Short PCI card
- 2 Duplex sockets for connection of plastic and PCF FOCs with 2 simplex plugs each to the optical PROFIBUS
- 9-pin Sub-D socket for connecting to PROFIBUS
- Connection for external power supply. This means data transmission on the optical line is not interrupted when the PC is switched off.
- Diagnostic LEDs.
- Parallel operation of up to 4 CPs.
- The software can switch assignment of master and slave to the optical and electrical interface.

The module is installed via PCI standard mechanisms (plug & play).

It is connected to the optical PROFIBUS with integrated interface and OBT by:

Plastic and PCF FOCs with simplex plugs.

It is connected to the electrical PROFIBUS by

- Plastic and PCF-FOC with simplex plugs to an OBT.

Functions

PROFIBUS-DP

Access to process data

The CP 5614 is operated as a PROFIBUS-DP master and slave module which holds the process image (input/output and diagnostic data) in the Dual Port-RAM. The high-performance data exchange with the PROFIBUS slaves is handled independently by the CP 5614 FO hardware. The user has direct access to the Dual Port-RAM.

The process data of the slaves are always consistent, i.e. the user gets the data from one and the same DP cycle.

Parallel operation of DP 5613 (DP master) and DP-Base (DP master, DP slave) is not possible.

Event/filter mechanism

The user receives up-to-date data via two access mechanisms:

- Cyclic polling of the DP slaves (higher load on host CPU)
- Signalling by new kind of event/filter mode in the event of changes in the input data of a slave (minimum load on host CPU)

Both alternatives can be combined. Optimum utilization of the PC is therefore possible for the application in question.

The new event/filter mechanism can also be used for:

- Signalling by Interrupt for diagnostic messages from slaves
- In equidistant mode signalling by interrupt:
  - Start DP cycle
  - End of cyclic data exchange with the DP slaves (from hardware version 3, in preparation)

  Equidistant mode settable as of STEP 7 V5.1

FastLogic
(rapid shutdown)

FastLogic means that the CP5614 FO can react automatically to up to 4 plant states. A fast response time and independence of the host application is achieved here e.g. fast switch off of devices.

Functions
(continued)

DP programming interface

The DP programming interfaces of the CP 5613 and CP 5614 FO are identical.

The DP programming interface of the CP 5614 FO has the following functions:

- DP slave
- DP master class 1 including acyclic DP extensions.
- DP master class 2 (in preparation) incl. non-cyclic expansions

Access to the process data is directly through the Dual Port-RAM. The Dual Port-RAM interface not only offers fast access as a DP master/slave but also a basis for portability to other operating system environments (e.g. VXWorks, QNX, RMOS).

A DP master and a DP slave library (DP_BASE.DLL or DPS_BASE.DLL) offer administrative function calls (initialization and management services as well as diagnostic functions).

A transfer mechanism (application in the PC) can be set by software as a link for data exchange between the master and slave interface.

In this manner, defined I/O data can be transferred between the master interface and the slave interface.

The two connected PROFIBUS networks can be operated with different PROFIBUS bus parameters due to their mutual independence.

Development Kit DK-5613

The Development Kit DK-5613 offers access to the functions DP master class 1 including non-cyclic DP expansions.

With the software development kit DK-5613 the communication processors CP 5613 and CP 5614 can be integrated in any operating system environments. The kit contains the necessary source code including the descriptions in PDF format and can be downloaded from Internet.

Access to process data with DP-5613

The user interface is compatible with software package DP-5412.

- DP master class 1

The CP 5614 FO operates as a DP master class 1 according to IEC 61158/EN 50170 and handles data transfer with the distributed stations (DP slaves) completely independently. In a fixed, repetitive message cycle, the central controller exchanges information with the DP slaves (e.g. ET 200S). The DP programming interface (DPLib.DLL) provides the PC programmer with function calls for data transfer. In addition, the DP interface offers the functions SYNC and FREEZE as well as the activation and deactivation of slaves.

The DP functional expansions with respect to master class 1 enable non-cyclic read and write functions (DS_READ, DS_WRITE) as well as alarm acknowledgement (ALARM_ACK) to be performed parallel to cyclic data traffic. The non-cyclic transmitted data (e.g. parameterization data) are changed very rarely in comparison with the cyclic measured values and are transmitted with low priority parallel to the fast cyclic useful data transfer. Interrupt acknowledgment in the master ensures reliable transfer of the interrupts from DP slaves (DS_READ, DS_WRITE, DS_DATA_TRANSPORT).

Parallel operation of DP-Base and DP 5613 software is not possible.

- DP master class 2

In addition to DP master class 1 services, the CP 5614 FO also offers DP master class 2 services in connection with the DP programming interface according to IEC 61158/EN 50170. Devices of this type (programming, configuration or operating devices) are used for commissioning, configuring the DP system or system operation in normal operation (diagnostics).

The DP programming interface provides the following services:

- Master diagnostics
- Slave diagnostics
- Read inputs/outputs of a slave
- Reading configuration data and
- Changing the slave address.

The extended DP functions also include non-cyclic access to the parameters and measured values of a slave (e.g. field devices of the process automation, intelligent HMI devices.
This type of slave has to be supplied with extensive parameter data during startup and normal operation. (DS_READ, DS_WRITE, DS_DATA_TRANSPORT).

Configuration of PROFIBUS-DP takes place with the enclosed COM PROFIBUS PC-Edition.

Functions
(continued)

Software for PG/OP communication

This software enables programming of the SIMATIC S5/S7 controllers via PROFIBUS in connection with STEP 5/STEP 7.
The PG/OP communication for the CP 5614 FO is already available after installing the CP 5614 FO (DP-Base). No additional software package is needed.

S5-compatible communication (SEND/RECEIVE based on the FDL interface)

SEND/RECEIVE (FDL interface) is already available after installation of the CP 5614 FO (DP-Base) and offers data exchange services for diagnostics and management. No additional software package is needed.

Software for S7 communication (S7-5613)

The user interface is compatible with S7-5412.

SIMATIC S7 system components communicate with each other via S7 communication. The S7 programming interface enables PG/PC application programs access to SIMATIC S7 system components. The SIMATIC S7 data can be accessed easily and flexibly.

The following services are available with S7 communication:

Administrative services

- Link management
- Mini database
- Trace.

Data transfer services

- Reading/writing of variables

BSEND/BRECEIVE
(up to 64 Kbytes per task).

Software for PROFIBUS-FMS interface (FMS-5613)

The user interface is compatible with software FMS-5412.

With the FMS programming interface, AT-compatible PCs can exchange data with FMS-capable controllers (e.g. S5/S7) and field devices of other manufacturers. The use of the FMS protocol ensures open communication.

The following services are available via the FMS interface:

- Administrative services
- CRL management services
- FMS connection management services
- Object directory management services for clients and server.
- Variable services for clients and server (read, write, information report).
- Server functionality
- VFD (virtual field device) services for clients and server.
- Bus access information services (live list).
- Trace and mini database

User interfaces

- OPC interface

The OPC server contained in the respective software package can be used as a standard programming interface for the protocols PROFIBUS-DP, S7 communication and PROFIBUS-FMS to connect automation applications to OPC-capable Windows applications (Office, HMI systems etc.).

- Programming interface via C-Library

The programming interfaces for existing applications are implemented as a Dynamic Link Library (DLL). The following compilers can therefore be used in conjunction with the SIMATIC NET products:

- Microsoft Visual C/C++ V6.0
- Microsoft Visual Basic V6.0

For Borland programming interfaces (e.B. DELPHI) partner solutions of the AIXO Co. are offered.

For solutions for other operating systems, see the Development Kit DK-5613.

The DK-5613
can be found in the Internet.



http://www.ad.siemens.de/net/dk5613

Configuration

For all packages mentioned above, the configuration tools are included in the scope of supply.

The complete configuration of the S7 communication is performed using STEP 7 V5.1 and higher. The configurations generated for the PCs using STEP 7 are stored in files which are subsequently transferred to the individual PCs.

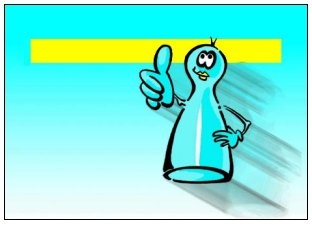
Configuration of PROFIBUS-DP and FMS takes place with the enclosed COM PROFIBUS PC-Edition.

Diagnostics

Extensive diagnostic tools are available (for installation, commissioning and operation) for the module itself and for the PROFIBUS network.

Therefore a PROFIBUS network can be started up quickly and easily with a CP 5614 FO.

Designed for Industry



- Only 1 slot is required for a master and slave.
- Direct connection to the optical PROFIBUS by integrated FOC interface
- Fastest possible access to process data via Dual Port-RAM
- Short response time with FastLogic
- Process-consistent data from a DP cycle
- Higher computing performance in the PC by relieving the host CPU
- Easy portability to other operating systems by a Dual Port-RAM interface
- Can also be used in a high temperature industrial environment
- Flexible application by switchable assignment of optical and electrical interface to master and slave

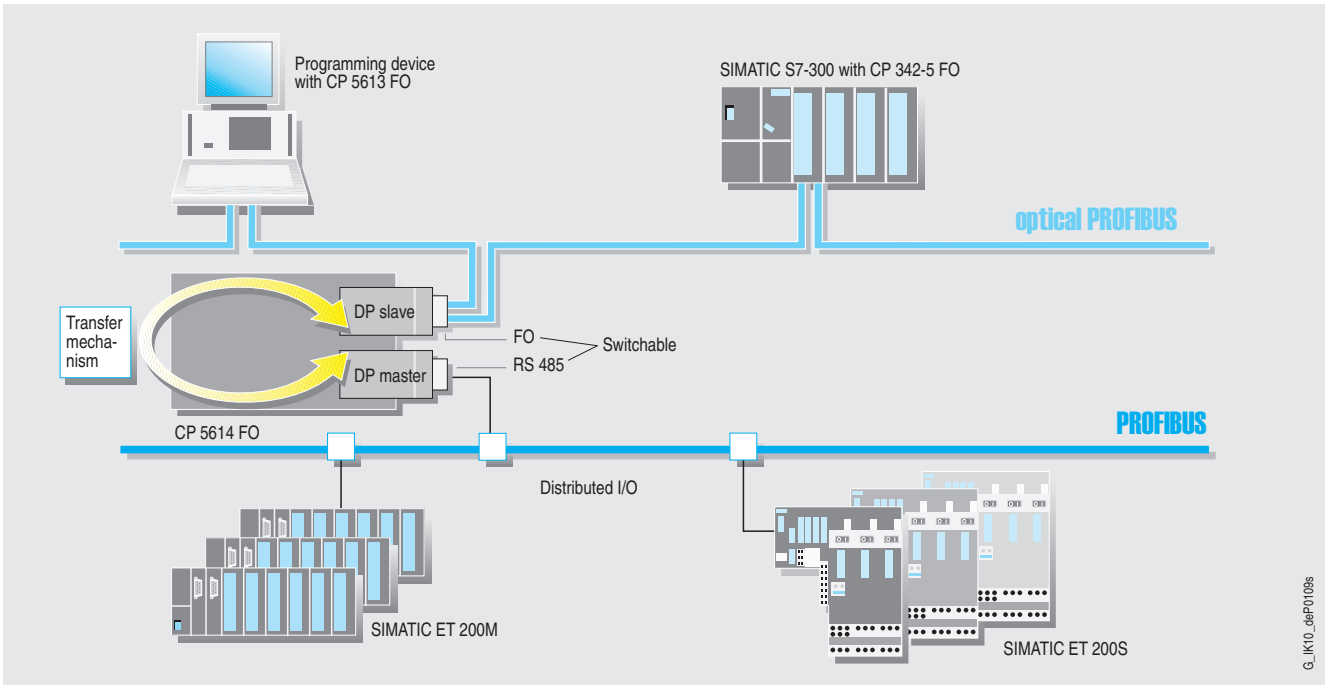


Fig. 3/108 Configuration example with CP 5614 FO

CP 5614 FO communication processor

Technical specifications

Baud Rates		9.6 Kbit/s to 12 Mbit/s
Basic interface setting		
• PROFIBUS master		2 × Duplex socket (FO)
• PROFIBUS slave		9-pin Sub-D socket
Interfaces switchable by software call		
• PROFIBUS master		9-pin Sub-D socket
• PROFIBUS slave		2 × Duplex socket (FO)
• External power supply (optional) via standard external power supply		Low voltage socket 3.5 mm/1.3 mm ±•)=
Supply voltage (from PCI)		5 V DC ±5% 12 V DC ±5%
Current consumption		
• from 5 V DC		1.6 A
• from 12 V DC		0.3 A
Power loss		8 W
Supply voltage (optional) external power supply		9 –12 V DC
• Current consumption		0.4 A
• Power loss		3.6 – 4.8 W
Perm. ambient conditions		
• Operating temperature – without fan – with fan (air current 0.5 m/s)		 +5 °C to +40 °C +5 °C to +60 °C
• Transport/storage temperature		–40 °C to +70 °C
• Relative humidity	max.	95% at +25 °C
Design		
• Module format		PCI card
• Dimensions (W × H) in mm		107 × 168
• Weight	approx.	300 g
• Space required		1 × PCI slot
Performance data Single protocol mode		
• Number of connectable DP slaves	max.	122
• Data area of slave interface: input data, output data, diagnostics data		244 bytes each
• No. of parallel FDL tasks to be processed	max.	120
• No. of PG/OP and S7 connections	max.	50 1)
• No. of FMS connections	max.	40 2)

1) for credit = 1; PDU size ≤ 480 bytes

2) for credit = 1

Ordering data

	Order No.
CP 5614 FO communication processor PCI card with master and slave connection to PROFIBUS, incl. Windows NT 4.0, 2000 Pro drivers, DP-RAM interface for DP master and slave, configuration software with electronic manual on CD-ROM	**6GK1 561-4FA00**

Ordering data

	Order No.
Development Kit 1) **DK-5613** Software Development Kit for CP 5613/CP 5614 for integration in any operating system environments on systems with PCI slot	
DP-5613/Windows NT 4.0, 2000 Pro Software V2.1 for DP protocol on CP 5613/CP 5614/CP 5613 FO/ CP 5614 FO, incl. PG, FDL and DP-OPC server, with electronic manual; on CD-ROM, German/English	**6GK1 713-5DB21-3AA0**
S7-5613/Windows NT 4.0, 2000 Pro Software V2.1 for S7 communication on CP 5613/CP 5613 FO/ CP 5614/CP 5614 FO, incl. PG, FDL and S7-OPC server, with electronic manual on CD-ROM, German/English	**6GK1 713-5CB21-3AA0**
FMS-5613/Windows NT 4.0, 2000 Pro Software V2.1 for FMS protocol on CP 5613/CP 5613 FO/ CP 5614/CP 5614 FO, incl. PG, FDL and FMS-OPC server, with electronic manual on CD-ROM, German/English	**6GK1 713-5FB21-3AA0**
PROFIBUS FastConnect RS 485 bus connector Plug 180	**6GK1 500-0FC00**
PROFIBUS bus terminal 12M	**6GK1 500-0AA10**
PROFIBUS plastic fiber optic, simplex plug / polishing set	**6GK1 901-0FB00-0AA0**
PROFIBUS plastic fiber optic, stripping tool set	**6GK1 905-6PA10**
Connection adapters • 50 pieces	**6ES7 195-1BE00-0XA0**
Manual CP 5613/CP 5614 and SOFTNET for PROFIBUS Including: Description of the interfaces (FMS, DP, S7, FDL), OPC server, configuration tools	
• German	**6GK1 971-5DA00-0AA0**
• English	**6GK1 971-5DA00-0AA1**
SIMATIC NET Software Update Service For Industrial Ethernet, PROFIBUS, OPC server Including manuals, on CD-ROM, German/English	**6GK1 704-0AA00-3AA2**
Electronic manuals Communication systems, protocols, products on CD-ROM German/English	**6GK1 975-1AA00-3AA0**

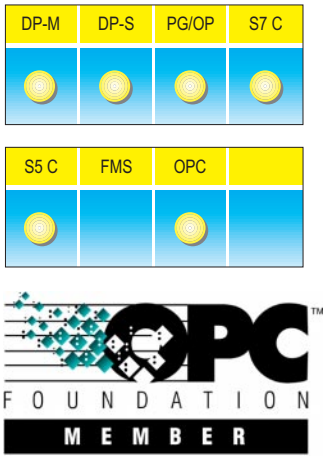
1) Download from Internet under:



http://www.ad.siemens.de/net/dk5613

CP 5511 communication processor

Overview





- For connecting PG/PCs and notebooks with PCMCIA slot to PROFIBUS and MPI of the SIMATIC S7
- Communication services:
  - PROFIBUS-DP master class 1 with SOFTNET-DP.
  - PROFIBUS-DP master class 2 including acyclic DP expansions with SOFTNET-DP.
  - PROFIBUS-DP slave with SOFTNET-DP slave.
  - PG/OP communication
  - S7 communication with SOFTNET-S7.
  - S5-compatible communication (SEND/RECEIVE based on the FDL interface) with SOFTNET-DP or SOFTNET-S7.
- PCMCIA card type II; for PG/PCs with PCMCIA slot and notebooks
- Used with:
  - STEP 7, ProTool®, Micro/Win, ProTool/Pro®, SIMATIC PDM (for PG/OP communication)
  - COM PROFIBUS
  - SOFTNET-S7 (for S7 communication).
  - SOFTNET-DP (for DP).
- OPC servers are supplied with the communication software

Application

The CP 5511 enables connection of programming devices and AT-compatible PCs to PROFIBUS and to the multipoint interface (MPI) of SIMATIC S7:

- for connecting PCMCIA slot and notebooks

Design

- PCMCIA card type II
- Adapter with 9-pin Sub-D socket for connection to PROFIBUS

Functions

The CP 5511 is operated under different software packages and allows the user to execute programming device functions and PC functions via PROFIBUS and the multipoint interface (MPI).

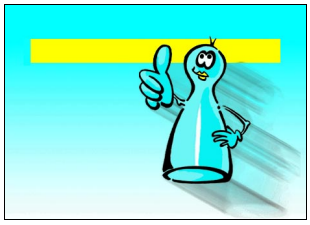
Only one CP can be operated for each PG/PC/notebook. Similarly only one protocol (PROFIBUS-DP, S7 communication or FDL) can be used for each CP.

The following software packages support the CP 5511:

- STEP 7 as of V3.2
  Drivers for the CP 5511 are supplied with STEP 7
- SOFTNET-S7
  The S7 programming interface can be used with this package
- SOFTNET-DP
  With this the CP 5511 can be used as a PROFIBUS-DP master class 1 or 2
- SOFTNET-DP slave
  for using the CP 5511 as a PROFIBUS-DP slave
- COM PROFIBUS as of V3.3
  With this package the CP 5511 can be used for commissioning or diagnostics (DP online functions) for PROFIBUS-DP systems
- STEP 7-Micro/Win as of V2.1
  Hardware base for the programming software of the SIMATIC S7-200 programmable controller
- ProTool, ProTool/PRO
  The CP 5511 can be used as the hardware basis for the configuration tool for SIMATIC operator panels, touch panels and text displays.

CP 5511 communication processor

Designed for Industry



- Connection for notebooks or other portable PCs to PROFIBUS (e.g. for diagnostics and commissioning)
- Easy installation and commissioning

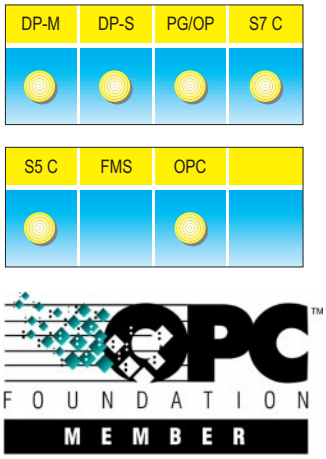
Technical specifications

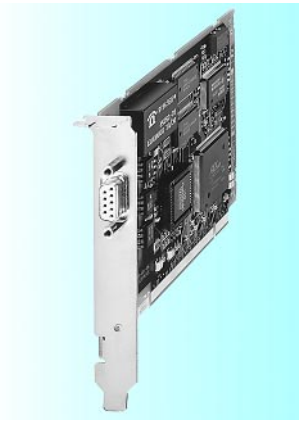
Data transfer rate		9.6 Kbit/s to 12 Mbit/s
Interfaces		
• Connection to PROFIBUS		9-pin Sub-D socket
• Connection to PG/PC		PCMCIA slot type II
Supply voltage		+5 V DC ±5%
Current consumption		typ. 270 mA, max. 360 mA
Power loss		1.8 W
Perm. ambient conditions		
• Operating temperature		+5 °C to +40 °C
• Transport/storage temperature		–20 °C to +60 °C
• Relative humidity	max.	95% at +25 °C
Design		
• Module format		PCMCIA type II
• Dimensions (W × H × D) in mm		54 × 85 × 5
• Weight		
– without adapter	approx.	30 g
– with adapter	approx.	130 g
• Space required		1 × PCMCIA slot type II

Ordering data

	Order No.
Communication processor CP 5511 PCMCIA card for connecting a PG or PC to PROFIBUS or MPI	**6GK1 551-1AA00**
SOFTNET-S7/Windows 98, NT 4.0, 2000 Pro Software V5.3 for S7 communication incl. FDL and S7-OPC server, with electronic manual on CD-ROM	**6GK1 704-5CW53-3AA0**
SOFTNET-DP/Windows 98, NT 4.0, 2000 Pro Software V5.3 for DP protocol incl. FDL and DP-OPC server, with electronic manual on CD-ROM	**6GK1 704-5DW53-3AA0**
SOFTNET-DP slave/Windows 98, NT 4.0, 2000 Pro Software V1.2 for DP slave, incl. OPC server, with electronic manual on CD-ROM	**6GK1 704-5SW12-3AA0**
PROFIBUS FastConnect RS 485 bus connector Plug 180 With 180° cable outlet	**6GK1 500-0FC00**
Manual CP 5613/CP 5614 and SOFTNET for PROFIBUS Including: Description of the interfaces (FMS, DP, S7, FDL), OPC server, configuration tools	
• German	**6GK1 971-5DA00-0AA0**
• English	**6GK1 971-5DA00-0AA1**
SIMATIC NET Software Update Service For Industrial Ethernet, PROFIBUS, OPC server, including manuals, on CD-ROM, German/English	**6GK1 704-0AA00-3AA2**
Electronics Manuals Communication systems, protocols, products on CD-ROM German/English	**6GK1 975-1AA00-3AA0**

Overview





- For connecting PG/PC to PROFIBUS and MPI of the SIMATIC S7
- Communication services:
  - PROFIBUS-DP master class 1 with SOFTNET-DP.
  - PROFIBUS-DP master class 2 including acyclic DP expansions with SOFTNET-DP.
  - PROFIBUS-DP slave with SOFTNET-DP slave.
  - PG/OP communication
  - S7 communication with SOFTNET-S7.
  - S5-compatible communication (SEND/RECEIVE on the basis of the FDL interface) with SOFTNET-DP or SOFTNET-S7
- Short PCI card for programming device / PC with PCI slot.
- Used with:
  - STEP 7, STEP 7-Micro/Win, ProTool, ProTool/Pro, SIMATIC PDM (for PG/OP communication)
  - COM PROFIBUS
  - SOFTNET-S7 (for S7 communication).
  - SOFTNET-DP (for DP).
- OPC servers are supplied with the communication software

Application

The CP 5611 enables the connection of programming devices and PCs to PROFIBUS and multipoint-capable MPI interface of the SIMATIC S7.

- For PUs/PCs with PCI slot.

Design

- Short PCI card
- 9-pin Sub-D socket for connection to PROFIBUS

Functions

The CP 5611 is operated under different software packages and allows the user to execute programming device functions and PC functions via PROFIBUS and the multipoint interface (MPI).

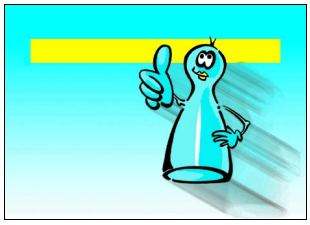
Only one CP can be operated for each programming device/PC. Similarly only one protocol (PROFIBUS-DP, S7 communication or FDL) can be used for each CP.

The following software packages support the CP 5611:

- STEP 7 V3.2 upwards under Windows 95 and NT 4.0; Windows 98 from V4.02 and K4.02.5. Drivers for the CP 5611 are included in the scope of supply of STEP 7.
- SOFTNET-S7 The S7 programming interface can be used with this package
- SOFTNET-DP With this the CP 5611 can be used as a PROFIBUS-DP master class 1 or 2
- SOFTNET-DP slave For using the CP 5611 as a PROFIBUS-DP slave
- COM PROFIBUS as of V3.3 The CP 5611 can be used with this package for commissioning or diagnostics (DP online functions) for PROFIBUS-DP systems
- STEP 7-Micro/Win as of V2.1 Hardware base for the programming software of the SIMATIC S7-200 programmable controller
- ProTool, ProTool/PRO The CP 5611 can be used as the hardware basis for the configuration tool for SIMATIC operator panels, touch panels and text displays.

CP 5611 communication processor

Designed for Industry



- Connection for portable PCs to PROFIBUS (e.g. for diagnostics and commissioning)
- Easy installation and commissioning

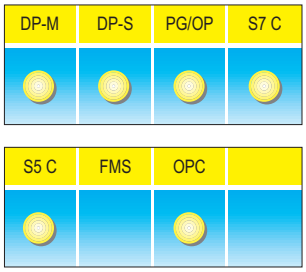
Technical specifications

Data transfer rate		9.6 Kbit/s to 12 Mbit/s
Interfaces		
• Connection to PROFIBUS		9-pin Sub-D socket
Supply voltage		+5 V DC ±5%
Current consumption		0.5 A
Power loss		2.0 W
Perm. ambient conditions		
• Operating temperature		+5 °C to +40 °C
• Transport/storage temperature		–20 °C to +60 °C
• Relative humidity	max.	95% at +25 °C
Design		
• Module format		PCI card
• Dimensions (H x D) in mm		102 × 130
• Weight	approx.	100 g
• Space required		1 × PCI slot

Ordering data

	Order No.
CP 5611 communication processor PCI card for connecting a PG or PC to PROFIBUS	**6GK1 561-1AA00**
CP 5611 MPI Consists of PCI card CP 5611 and MPI cable, 5 m	**6GK1 561-1AM00**
SOFTNET-S7/Windows 98, NT4.0, 2000 Pro Software V5.3 for S7 communication incl. FDL and S7-OPC server, with electronic manual on CD-ROM	**6GK1 704-5CW53-3AA0**
SOFTNET-DP/Windows 98, NT 4.0, 2000 Pro Software V5.3 for DP protocol incl. FDL and DP-OPC server, with electronic manual on CD-ROM	**6GK1 704-5DW53-3AA0**
SOFTNET-DP slave/Windows 98, NT 4.0, 2000 Pro Software V1.2 for DP slave interface, with electronic manual on CD-ROM	**6GK1 704-5SW12-3AA0**
PROFIBUS FastConnect RS 485 bus connector Plug 180 With 180° cable outlet	**6GK1 500-0FC00**
PROFIBUS bus terminal 12M Bus terminal for connecting PROFIBUS stations up to 12 Mbit/s with connecting cable	**6GK1 500-0AA10**
Manual CP 5613/CP 5614 and SOFTNET for PROFIBUS Including: Description of the interfaces (FMS, DP, S7, FDL), OPC server, configuration tools	
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Overview



OPC FOUNDATION MEMBER

- Software for linking programmable controllers/PCs and notebooks to automation systems.
- Can be used in conjunction with CP 5511 (PCMCIA), CP 5611 (PCI) and integrated PROFIBUS interface of the SIMATIC PG/PC/PC
- Communication services:
  - PROFIBUS-DP master class 1
  - PROFIBUS-DP master class 2 with non-cyclic expansions
  - PROFIBUS-DP slave
  - PG/OP communication
  - S7 communication
  - S5-compatible communication (SEND/RECEIVE based on the FDL interface)

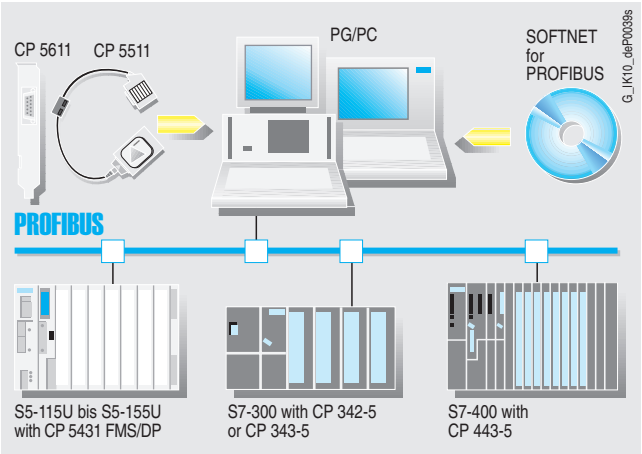


Fig. 3/109 System configuration: SOFTNET for PROFIBUS

- OPC servers are supplied with the communication software

Application

SOFTNET for PROFIBUS can be used to connect PCs to automation systems, e.g. SIMATIC S7, via PROFIBUS.

The following are available as user interfaces:

- DP protocol
- PG/OP communication for SIMATIC S7
- S7 communication
- S5-compatible communication (SEND/RECEIVE based on the FDL interface)

SOFTNET is available for the following interfaces:

- CP 5511 (PCMCIA card)
- CP 5611 (PCI card)
- Integrated PROFIBUS interfaces of SIMATIC programming devices/PCs.

Principle of operation

SOFTNET processes the complete protocol stack in the PC.

This architecture means that, unlike CP 5613 or CP 5614 products the performance capability of the SOFTNET packages depends on the construction and / or the workload of the PCs used.

Functions

Software for DP protocol (SOFTNET-DP)

- DP master class 1

SOFTNET-DP offers DP master class 1 functions in conjunction with the CP 5511 or CP 5611.
In a fixed, repetitive message cycle, the central controller exchanges information with the DP slaves (e.g. ET 200S). The DP programming interface (DPLib.DLL) provides the PC programmer with function calls for data transfer. In addition, the DP interface offers the functions SYNC and FREEZE as well as the activation and deactivation of slaves.

- DP master class 2

In addition to DP master class 1 services, SOFTNET-DP also offers DP master class 2 services.

Devices of this type (programming devices, configuration devices or operating devices) are used on startup, on configuring the DP system or for operating the system during normal operation (e.g. diagnostics).
The DP programming interface provides the following services: Master diagnostics, slave diagnostics, reading the inputs and outputs of a slave, reading configuration data and changing the slave address. The extended DP functions also include non-cyclic access to the parameters and measured values of a slave (e.g. field devices of the process automation, intelligent HMI devices.
This type of slave must be supplied with extensive parameter data during startup and normal operation (DS_READ, DS_WRITE, DS_DATA_TRANSPORT).

- DP slave (SOFTNET-DP slave)

A DP slave is an I/O device that reads input information and supplies output information to the I/O. The quantity of input and output information depends on the type of device and can be up to 244 bytes. The slave applications can be implemented on the PC using the functions SET_INPUT and SET_OUTPUT of the slave programming interface.

Configuration of PROFIBUS-DP takes place with the enclosed COM PROFIBUS PC-Edition.
For the slave interface, an example GSD file is provided which can be adapted to the relevant application.

Functions
(continued)

Software for PG/OP communication

No special programming packages are required for the CP 5511 and CP 5611 because the drivers are contained in the scope of supply of STEP 7. Programming with STEP 5 is not possible with the CP 5511/CP 5611.

Software for S7 communication (SOFTNET-S7)

SIMATIC S7 system components communicate with each other via S7 communication. The S7 programming interface enables PG/PC application programs access to SIMATIC S7 system components. The SIMATIC S7 data can be accessed easily and flexibly.

The following services are available with S7 communication:

Administrative services

- Link management
- Mini database
- Trace.

Data transfer services

- Reading/writing of variables
- BSEND/BRECEIVE (up to 64 Kbytes per task).

The complete configuration of the S7 communication is performed using STEP 7 V5.0 SP3 and higher. The configurations generated for the PCs using STEP 7 are stored in files which are subsequently transferred to the individual PCs.

Software for S5-compatible communication (SEND/RECEIVE based on the FDL interface)

This layer 2 based interface is used for communication between

- PG/PC and SIMATIC S5
- PG/PC and SIMATIC S7
- PG/PC and PG/PC

.

SEND/RECEIVE offers the following services:

- Management services
- Connection establishment services
- Data transfer services

This interface is contained in SOFTNET-DP and SOFTNET-S7. Configuration is not necessary.

User interfaces

- OPC interface

The OPC server contained in the respective software package can be used as a standard programming interface for the protocols PROFIBUS-DP, S7 communication and PROFIBUS-FMS to connect automation applications to OPC-capable Windows applications (Office, HMI systems etc.).

- Programming interface via C-Library

The programming interfaces for existing applications are implemented as a Dynamic Link Library (DLL). The following compilers can therefore be used in conjunction with the SIMATIC NET products:

- Microsoft Visual C/C++ Version 6.0
- Microsoft Visual Basic Version 6.0

For Borland programming interfaces (e.g. DELPHI) partner solutions of AIXO are available.

Configuration

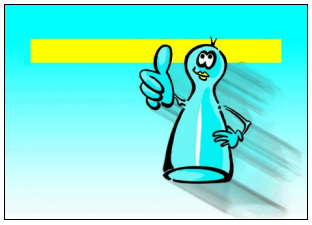
The necessary configuration tools are supplied with the appropriate packages.

The complete configuration of the S7 communication is performed using STEP 7 V5.0 ServicePack 3 and higher.

The configurations generated for the PCs using STEP 7 are stored in files which are subsequently transferred to the individual PCs.

Configuration of PROFIBUS-DP takes place with the enclosed COM PROFIBUS PC-Edition.

Designed for Industry



- Low-cost integration as PROFIBUS-DP master of class 1 or master of class 2 with SOFTNET-DP.
- as a PROFIBUS-DP slave with SOFTNET-DP slave
- to S7 communication with SOFTNET-S7

Performance data: Single protocol operation

		CP 5511	CP 5611
Number of connectable DP slaves	max.	60	60
No. of parallel FDL tasks to be processed	max.	32	100
No. of PG/OP and S7 connections	max.	8	8

Ordering data

Order No.

DP interface

SOFTNET-DP/Windows 98, NT 4.0, 2000 Pro — **6GK1 704-5DW53-3AA0**
Software V5.3 for DP protocol incl. FDL protocol and DP-OPC server, with electronic manual on CD-ROM

S7 communication

SOFTNET-S7/Windows 98, NT 4.0, 2000 Pro — **6GK1 704-5CW53-3AA0**
Software V5.3 for S7 communication incl. FDL protocol and S7-OPC server, with electronic manual on CD-ROM

SOFTNET-DP slave/Windows 98, NT 4.0, 2000 Pro — **6GK1 704-5SW12-3AA0**
Software V1.2 for DP slave interface, with electronic manual on CD-ROM

Manual CP 5613/CP 5614 and SOFTNET for PROFIBUS
Including:
Description of the interfaces (FMS, DP, S7, FDL), OPC server, configuration tools
- German — **6GK1 971-5DA00-0AA0**
- English — **6GK1 971-5DA00-0AA1**

SIMATIC NET Software Update Service — **6GK1 704-0AA00-3AA2**
For Industrial Ethernet, PROFIBUS, OPC server, including manuals, on CD-ROM, German/English

Electronic manuals — **6GK1 975-1AA00-3AA0**
Communication systems, protocols, products
on CD-ROM
German/English

System interfacing for PG/PC

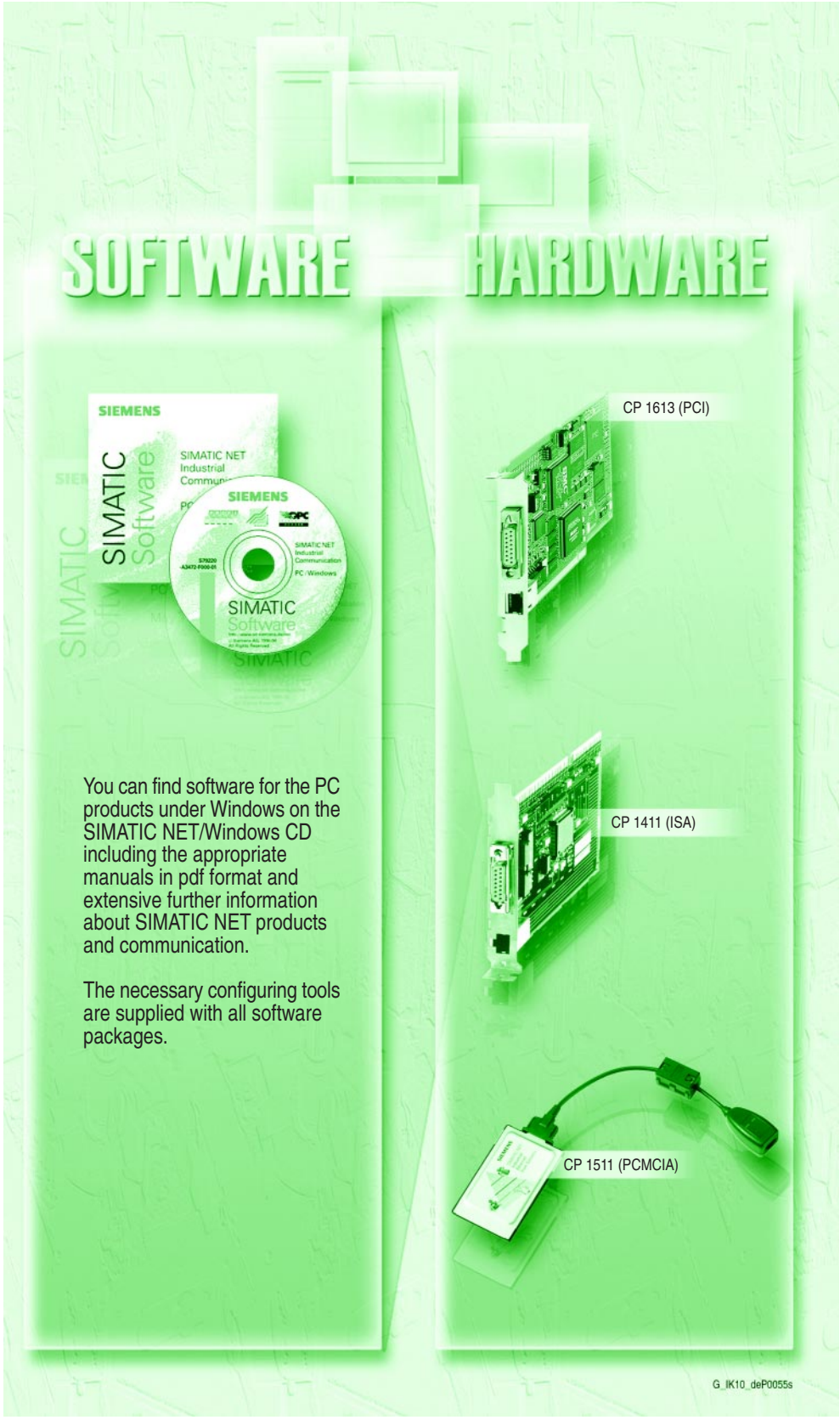


Fig. 4/53 System interfacing for PG/PC

CPs with their own microprocessor

- Protocol software runs on the CP
- Free PC resources for applications
- Suitable for extensive applications
- Recommended for applications with HMI systems with high performance requirements, e.g. WinCC
- Recommended for large-scale systems (5 stations and more, e.g. SIMATIC)
- Constantly high communication thruput
- Use for redundant communication
- Time synchronization

CPs without their own microprocessor

- Protocol software runs on the PG/PC
- PC resources are divided between communication and applications
- Suitable for less extensive applications
- Recommended for smaller sytems (up to 4 stations, e.g. SIMATIC)
- The communication performance depends on PC resources and PC workload

Data throughput Industrial Ethernet

A comparison between CP 1413, CP 1411®, CP 1511, CP 1413 (predecessor to CP 1613) and CP 1613 shows the course of the respective communication performance.

This course fluctuates in CP 1411 and CP 1511 with the appropriate software packages between 0 and the maximum throughput.

Used with software packages, communication performance for the CP 1613 is stable and high, permitting fast response times without fluctuations.

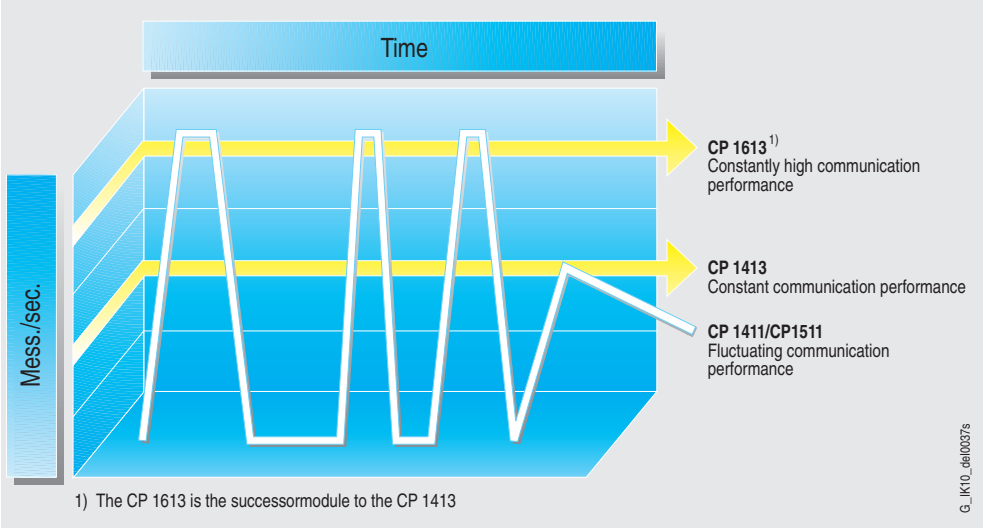


Fig. 4/54 Comparison of communication performance characteristics

CPU load

The communication must share the PC resources with other applications (especially HMI). In general, therefore, less than 25% of the host CPU time remains available for communication.

Whereas, under these conditions, e.g. the CP 1411/1511 only lets through an average of about 80 messages (with a strongly fluctuating curve), the CP 1613 still offers maximum throughput.

The stated throughput figures represent average values.

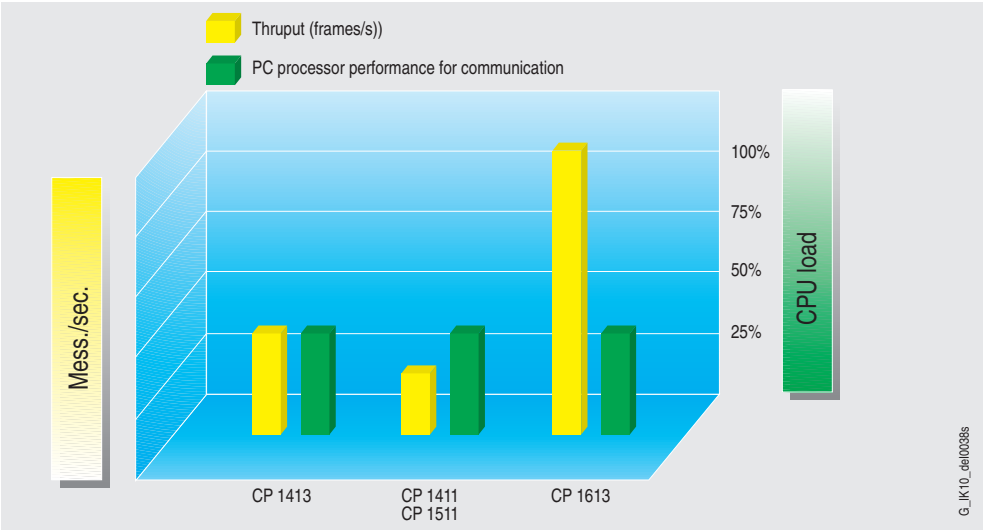


Fig. 4/55 CP 1613 throughput at 20% CPU availability for communication

Overview

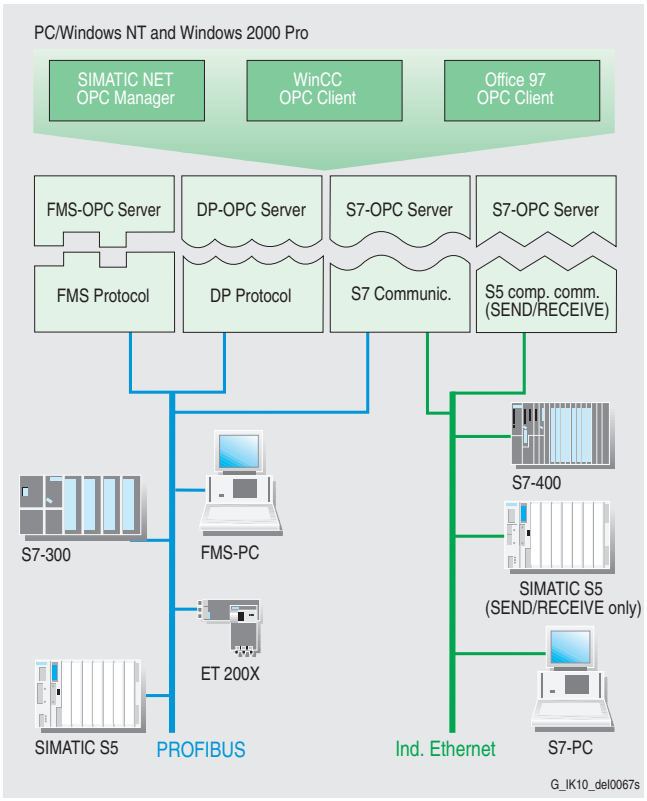


Fig. 4/56 System configuration with OPC server

- OPC servers are contained in the scope of supply of the communication software
- Standardized, open and vendor-independent interface.
- Connection of OPC-capable Windows applications to S7 communication and S5-compatible communication (SEND/RECEIVE).
- Builds on the software programming interfaces.
- Efficient data exchange for Windows NT 4.0 and Windows 2000 Pro
- OPC-Scout with browser function as OPC client and OCX data control (only S7 OPC server)

Application

Under Windows NT and Windows 2000 Professional, OPC (OLE for Process Control) can be used as an extension to the communications interfaces COM (Component Object Model) and DCOM (Distributed COM) for the user software.

The basic principle of OPC is that OPC client applications can communicate with the OPC server through a standard/open and thus multi-vendor interface.

Facility for linking to existing OPC-capable Windows applications (Office 97 or HMI systems) on the market.

For Industrial Ethernet, the following OPC servers are available:

- S7 OPC servers for S7 communciation, alarms and events as well as S5-compatible communciation (SEND/RECEIVE)

The OPC servers offer the following:

- Standardized access to SIMATIC S7 and SIMATIC S5 for OPC-capable applications under Windows NT and Windows 2000 Professional
- Integration between automation products from different manufacturers.
- Identical and easy-to-operate user interface for different components.
- Can be accessed from every computer in the LAN/WAN.
- High-performance data access via the Custom Interface (C++).
- Easy to use via the automation interface (VB) or the OCX data control supplied (S7 and FMS OPC server only).

Functions

- Open standardization of addressing via logical names for objects contained in an automation component or automation system.
- Support of symbols from STEP 7
- Efficient data exchange between a process component and a further processing application
- Simultaneous utilization of two or more servers by one client application.
- Simultaneous execution of two or more clients on one OPC server application.
- Server-specific configuration support.
- Interfaces
  - Custom interface for high-performance C++ applications.
  - Automation interface for easily created Visual Basic or comparable applications.
  - OCX data control for direct integration in Windows applications that support COM/DCOM (S7 OPC server only).

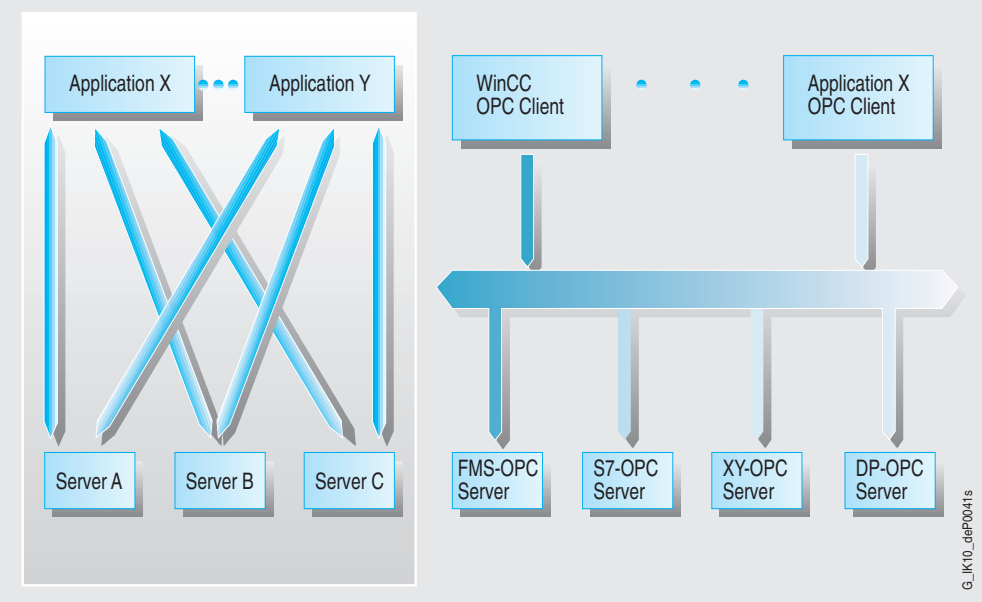


Fig. 4/57 Comparison of conventional client/server architecture with an OPC architecture

4

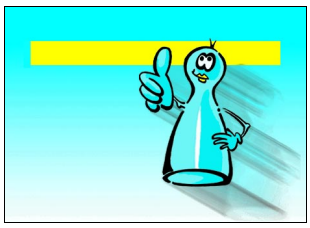
Configuration

The communications parameters can be completely configured using the tools in the software which is already installed.

The following demo programs are included in the scope of supply:

- For custom interface in C++
- For automation interface with Visual Basic.

Designed for Industry



- Different networks and protocols can be easily implemented due to the uniform interface.
- Low training and familiarization costs.
- Easy integration in the system environment and office applications via C++ and Visual Basic interface
- Applications can be generated quickly.
- Easy to handle and cost-effective because the OPC servers are supplied with the communication software

Technical specifications – OPC server

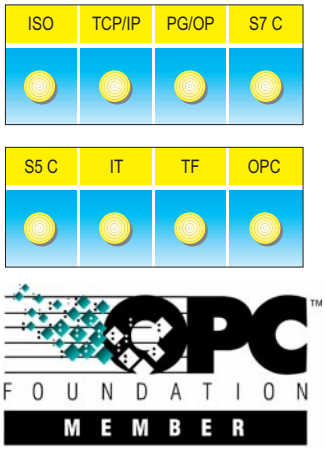
Programming	• Open and standardized • Can be implemented on installations from various manufacturers • Groups of variables (items)
Access to	• a set of variables; therefore a large quantity of data can be processed in a short time
Interfaces	• Custom Interface (C++); making OPC performing • Automation interface (VB, Excel, Access, Delphi, ...); therefore easy to use • Graphics with OCX; therefore parameterization instead of programming
Protocols	• DP protocol. • S7 communication • FMS protocol • S5-compatible communication (SEND/RECEIVE)
Availability	• Windows NT 4.0, 2000 Professional is automatically available for all applications after installation

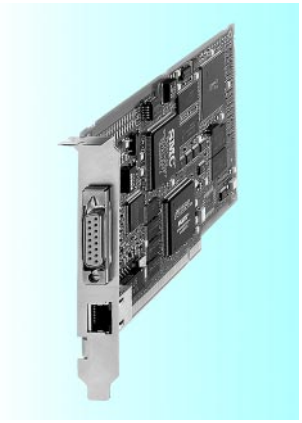
Product versions

Product	contains OPC servers for:
S7-1613	S7 communication S5-compatible communications
TF-1613	S5-compatible communications
SOFTNET-S7 Industrial Ethernet	S7 communication

CP 1613 communication processor

Overview





- PCI card with microprocessor for connecting PG/PC to Industrial Ethernet with 10/100 Mbit/s autosensing
- Communication services via
  - ISO or TCP/IP transport protocols
  - PG/OP communication
  - S7 communication
  - S5-compatible communication (SEND/RECEIVE)
  - TF protocol
- OPC servers are supplied with the communication software.
- 15-pin AUI/ITP
- RJ45 connection
- ISO and TCP/IP transport protocol onboard
- Large quantity framework (up to 160 connections with ISO, up to 64 connections with TCP/IP)

Application

The CP 1613 enables connection to Industrial Ethernet (10/100 Mbit/s) for SIMATIC PG/Industrial PC and PCs with PCI slot.

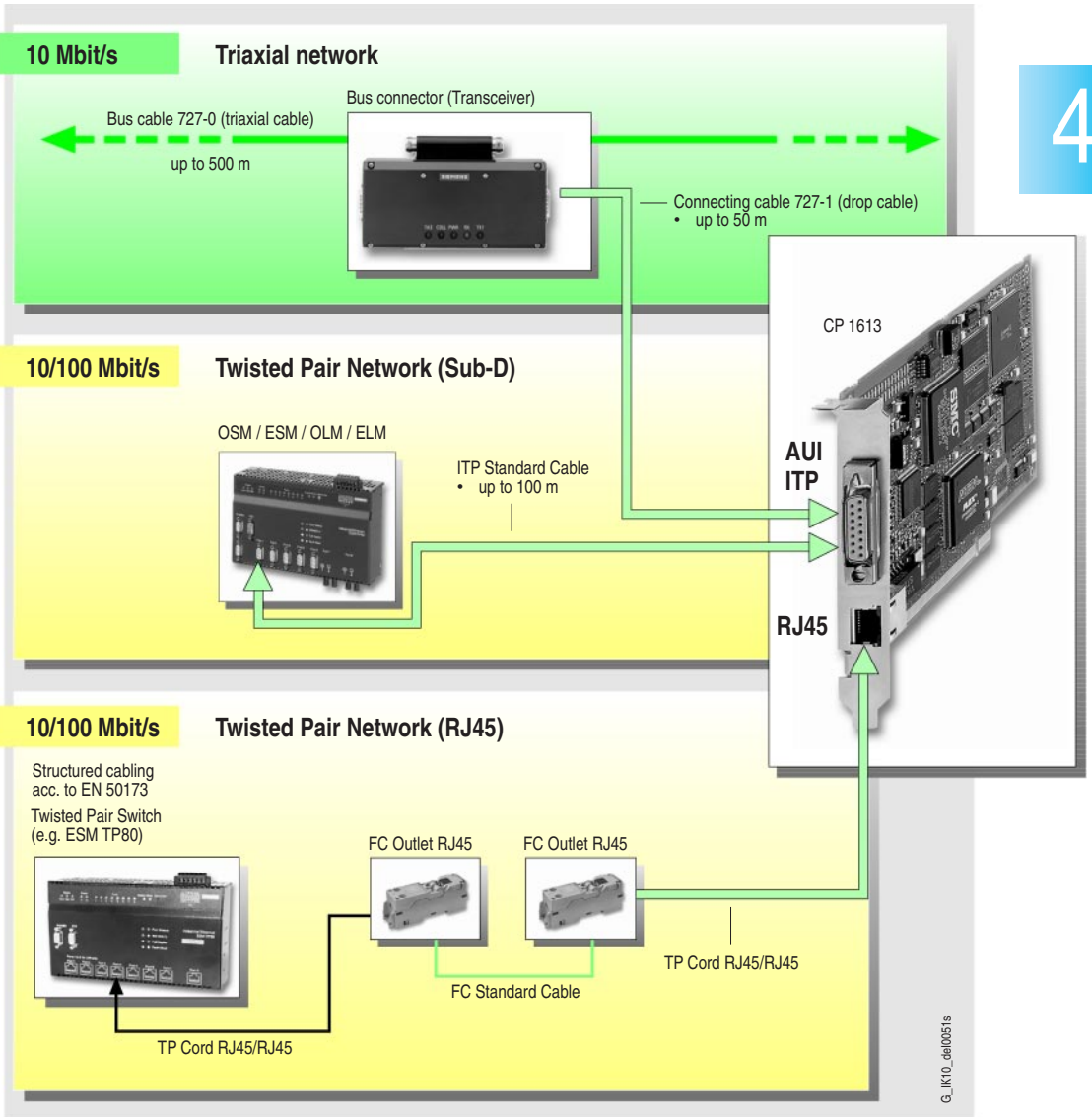


Fig. 4/58 Mains connection possibilities CP 1613

Design

The CP 1613 module (card with microprocessor) is plugged directly into a SIMATIC PG/ PC or a PC and requires a short PCI slot.

Connections:

- 15-pin Sub-D socket for use in industrial applications (automatic switching between AUI, ITP and RJ45 interface)
- RJ45 for connection in the office environment

The module is connected forexample

- for electrical networks via a 727-1 connecting cable/bus coupler to the 727-0 bus.
- for ITP via the ITP standard cable 9/15 to OSM/ESM/ star coupler
- for optical networks via the Mini OTDE optical transceiver.

Application

The module independently processes the protocols up to and including level 4 (transport).

To permit a large number of connections and high communication integrity, 16 Mbytes of memory are provided.

The data exchange between module and host takes place in master mode. This means that the CP 1613 accesses the physical RAM of the host.

The data transfer between the host system and the CP 1613 is handled by a Windows NT driver or Windows 2000 Pro driver.

The transfer rate is detected and automatically switched over (autosensing).

Functions

User interfaces

OPC interface

The OPC server contained in the respective software package can be used as a standard programming interface for the protocols S7 communication and S5-compatible communication to connect automation applications to OPC-capable Windows applications (Office, HMI systems etc.).

Programming interface via C library

The programming interfaces for the protocols S7 communciation, PG/OP communication, S5-compatible communication and TF protocol for existing applications are implemented as a Dynamic Link Library (DLL).

The following compilers can therefore be used in conjunction with the SIMATIC NET products:

- Microsoft Visual C/C++ V6.0
- Microsoft Visual Basic V6.0

Software for PG/OP communication

This software permits programming of SIMATIC S5 and S7 PLCs via Industrial Ethernet in combination with STEP 5/STEP 7 automation systems.

It is contained in all CP 1613 software packages.

Functions
(continued)

Software for S7 communication
(S7-1613 or S7-REDCONNECT)

The S7 programming interface enables PG/PC applications (e.g. WinCC) and application programs access to SIMATIC S7/M7 system components.

Thus, easy and flexible access to the data of the SIMATIC S7/M7 is possible.

S7 communication provides:

Administrative services

- Link management.
- Mini database.
- Trace.

Data transfer services

- READ/WRITE variables.
- BSEND/BRECEIVE

With S7-REDCONNECT, communication with the high-availability S7-400H system is possible.

Software for S5-compatible communication (SEND/RECEIVE)

This layer 4 based interface is used for communication between

- PG/PC and SIMATIC S5
- PG/PC and SIMATIC S7
- PG/PC and PG/PC

.

S5-compatible communication (SEND/RECEIVE) provides the following services:

- Management services
- Connection buildup service
- Data transfer services

The software is contained in the products S7-1613 and TF-1613.

Software for TF protocol
(TF-1613)

- The technological functions interface offers access to the MAP 3.0 open and well-proven automation protocol on Ethernet. The Technological Functions correspond in functionality to the international MMS services in accordance with ISO IS 9506.

MMS/TF services:

- Variable services
- Domain services
- Program invocation services
- General services for virtual devices (VMD support service)
- Services of TF link management (environment and general management services).

Further details are available in the Internet.

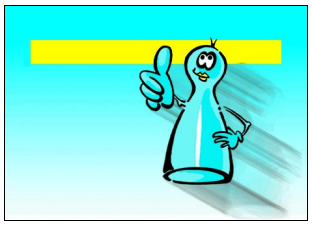


http://www.ad.siemens.de/net/ik-info

Configuration

- All configuration for S7 communication is performed using STEP 7 V5 upwards.
- The configuration settings for PCs made with STEP 7 are stored in files that are then transferred to the individual PCs.

Designed for Industry



- Continuous data throughput through protocol processing on the CP.
- Can be connected to any Ethernet network via AUI/ITP or RJ45 ports on the module.
- Free computer capacity for further applications in the PC, e.g. HMI (ISO and TCP/IP transport onboard)
- Simple handling through plug & play and autosensing (10/100 Mbit/s).
- Operation of large network configurations with one card due to large number of connections
- Can be used for redundant communication
- OPC as common interface

Technical specifications

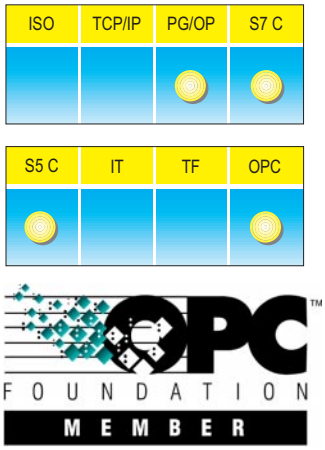
Transmission rate		10/100 Mbit/s
Interfaces		
• Connection to Industrial Ethernet (10/100 Mbit/s)		15-pin Sub-D socket (autom. switching between AUI and twisted pair)
• 10BaseT, 100BaseTX		RJ45
Supply voltage		5 V DC ±5% 12 V DC ±5%
Current consumption		
• from 5 V DC		600 mA
• from 12 V DC		500 mA
Power loss		4 W
Perm. ambient conditions		
• Operating temperature		+5 °C to +40 °C
• Transportation/storage temperature		–20 °C to +60 °C
• Relative humidity	max.	95% at +25 °C
Construction		
• Module format		Short AT format
• Dimensions (W × D) in mm		107 × 167
• Weight	approx.	200 g
• Space requirements		1 × PCI slot
Single protocol mode performance data		
S7 and PG/OP communication		
• No. of operable connections		
– ISO	max.	120
– TCP/IP	max.	120
S5-compatible communication (SEND/RECEIVE)		
• No. of operable connections		
– ISO	max.	120
– TCP/IP	max.	120

Ordering data

	Order No.
CP 1613 PCI card for connection to Industrial Ethernet (10/100 Mbit/s) with AUI/ITP and RJ45 port	**6GK1 161-3AA00**
S7-1613/Windows NT 4.0, 2000 Pro V2.1 Software for S7 communication S5-compatible communication (SEND/RECEIVE) and PG/OP communication incl. S7-OPC server for CP 1613 with electronic manual on CD-ROM German/English	**6GK1 716-1CB21-3AA0**
TF-1613/Windows NT 4.0, 2000 Pro V2.1 Software for TF protocol, S5-compatible communication PG/OP communication for CP 1613 incl. OPC server for S5-compatible communication with electronic manual on CD-ROM German/English	**6GK1 716-1TB21-3AA0**
PG-1613/Windows NT 4.0, 2000 Pro V2.1 Software for PG/OP communication for CP 1613, with electronic manual on CD-ROM German/English	**6GK1 716-1PB21-3AA0**
S7-REDCONNECT/Windows NT 4.0 V1.3 Software for fail-safe S7 communication via redundant networks for CP 1413, CP 5412 (A2), CP 1613, incl. S7-OPC server with electronic manual on CD-ROM German/English	**6GK1 716-0HB13-3AA0**
S7-REDCONNECT/1613 Windows NT 4.0 Upgrade V1.3 Expansion of S7-1613/Windows NT 4.0 to S7-REDCONNECT/Windows NT 4.0 on CD-ROM German/English	**6GK1 716-0HB13-3AA4**
Manual: CP 1613 for Industrial Ethernet Hardcopy: contains a description of the interfaces (S7, TF, S5-compatible communication), OPC server, configuring tool for CP 1613	
• German	**6GK1 971-1GA00-0AA0**
• English	**6GK1 971-1GA00-0AA1**
Electronic Manuals Communications systems, protocols, products on CD-ROM German/English	**6GK1 975-1AA00-3AA0**
SIMATIC NET Software Update Service for Industrial Ethernet, PROFIBUS, OPC server, including manuals, on CD-ROM, German/English	**6GK1 704-0AA00-3AA2**

S7-REDCONNECT

Overview



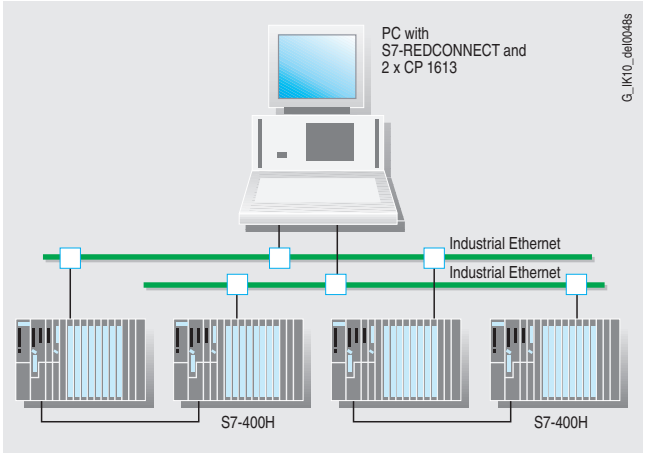


Fig. 4/59 System configuration S7-REDCONNECT

- For connection of PCs for redundant Industrial Ethernet to SIMATIC S7-400H
- For redundantly structured Industrial Ethernet.
- Operation is also possible in non-redundant networks.
- Completely integrated in STEP 7 from V5.0.
- OPC servers are supplied with the communications software

Application

The software package S7-REDCONNECT connects the SIMATIC S7-400H to applications on the PC, e.g. WinCC.

Typically, a redundant Industrial Ethernet is used. The software package can also be used where SIMATIC H systems are operated on non-redundant networks.

Mixed operation of redundant and non-redundant systems is also possible.

Design

The following components are necessary for assembling a SIMATIC H system with PC connection

PC with:

- up to two CP 1613 and S7-REDCONNECT for connecting the PC to Industrial Ethernet with ISO protocol under Windows NT 4.0

S7-400H with:

- CP 443-1 for connecting the S7-400H to Industrial Ethernet with ISO protocol
- STEP 7 from V5.0 upwards for configuring.

Application

The highly available S7 communication is fed via a master and a reserve connection concealed for the application which is monitored during operation and switched over in the event of a fault.

Fault detection, switching over if required, communication monitoring and synchronization are handled in the background invisible to the application.

The application, e.g. Win CC, communicates with the 2 subunits of the S7-400H in the same way as with an S7 CPU.

Functions

- S7-REDCONNECT contains the functional scope of the S7-1613 software package (S7 communication, S5-compatible communication and PG/OP communication) as well as additional redundant communication via S7 connections. An additional licence for S7-1613 is unnecessary.
- S5-compatible communication
- Time synchronization.
- Continuing to use existing Windows applications
- Services for monitoring the redundant communication.
- Diagnostics tool for visualizing the communication status

User interfaces

OPC interface

The OPC server contained in the respective software package can be used as a standard programming interface for the protocols S7 communication and S5-compatible communication to connect automation applications to OPC-capable Windows applications (Office, HMI systems etc.).

Programming interface via C library

The programming interfaces for the protocols S7 communication, PG/OP communication, S5-compatible communication and TF protocol for existing applications are implemented as a Dynamic Link Library (DLL).

The following compilers can therefore be used in conjunction with the SIMATIC NET products:

- Microsoft Visual C/C++ V6.0
- Microsoft Visual Basic V6.0

Configuration

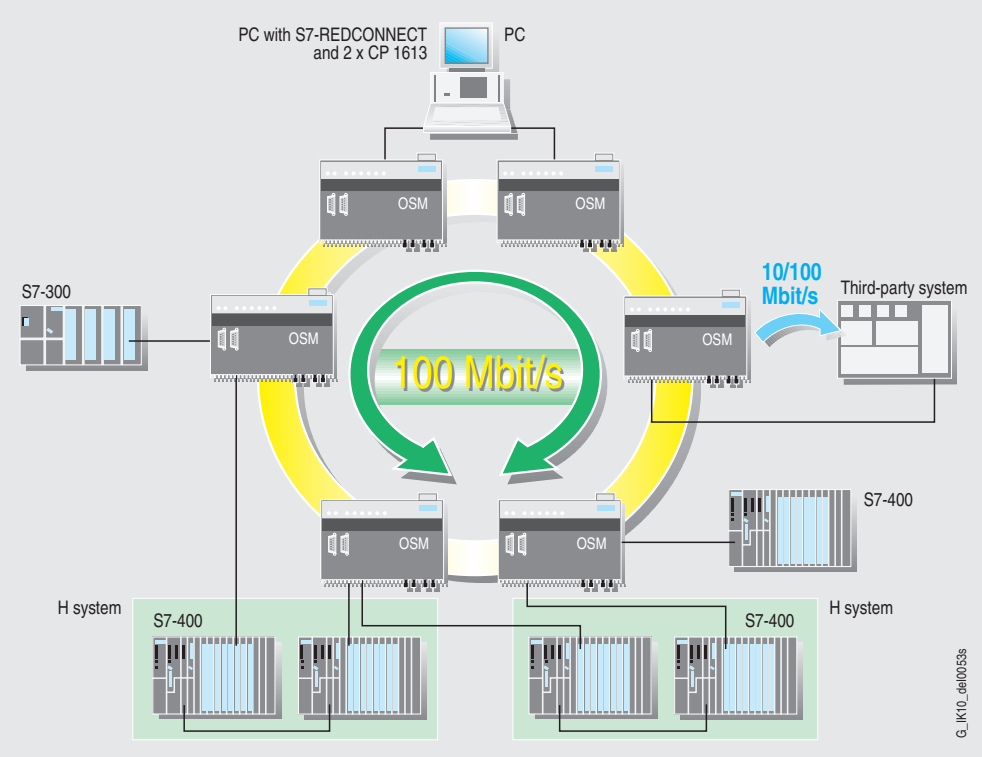
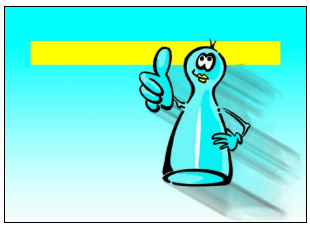


Fig. 4/60 Redundant network with S7-400 H and OSM

Configuration

The configuration established for the PCs with STEP 7 from V5.0 is written to files and transferred to the PCs.

Designed for Industry



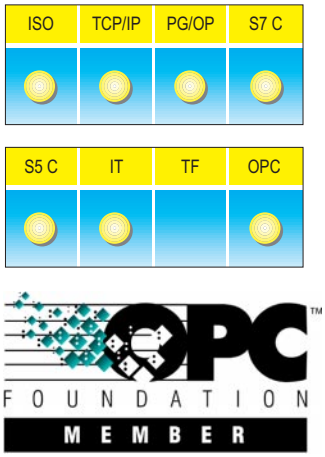
- Provides protection against communication failure in the event of a fault in the double bus or in redundant rings.
- Simplifies communication of a PC application with the SIMATIC S7-400H system.
- Safeguards previous investments due to the use of existing applications and the flexible application possibilities.
- No additional programming required for PC and H systems.
- Increases availability of the PC application (e.g. PC S7) through redundant communication.

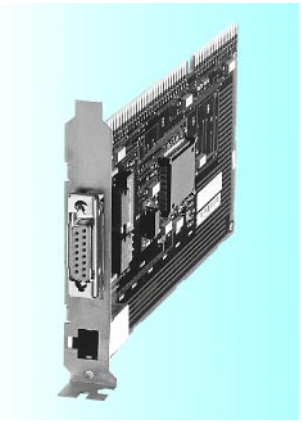
Ordering data

	Order No.
S7-REDCONNECT/Windows NT 4.0 ▶ V1.3 Software for fail-safe S7 communication via redundant networks (Industrial Ethernet, PROFIBUS) under Windows NT 4.0, can be operated with CP 5412 (A2) and CP 1613 including S7-OPC server with electronic manual on CD-ROM German/English	**6GK1 716-0HB13-3AA0**
S7-REDCONNECT/1613/ Windows NT 4.0 Upgrade ▶ V1.3 Expansion of S7-1613/Windows NT 4.0 to S7-REDCONNECT/Windows NT 4.0 on CD-ROM German/English	**6GK1 716-0HB13-3AA4**

CP 1411 communication processor

Overview





- For connecting PG/PC to Industrial Ethernet
- Communication services via ISO or TCP/IP transport protocols
  - PG/OP communication
  - S7 communication
  - S5-compatible communication (SEND/RECEIVE)
- Designed for use in industrial environments.
- ISA card
- Interfaces: AUI, Industrial Twisted Pair, RJ45 (for office applications).
- Plug&Play
- OPC servers are supplied with the communication software

Application

The CP 1411 is an Ethernet card which can be operated in any programming device/PC with a free ISA slot.

It is intended for applications in an industrial environment.

The CP 1411 can be operated with all SOFTNET® for Industrial Ethernet packages.

Design

- 15-pin Sub-D socket for use in industrial applications (automatic switching between AUI or industrial twisted pair)
- RJ45 interface for connection in the office environment

With a special controller, the CP 1411 is able to support the plug&play mechanism of the operating system.

There is no need to set jumpers. The configuration is made by software. The settings are resident on the module. Free assignment of the Ethernet address allows the user to make rapid and simple changes for startup or diagnostics.

Application

The CP 1411 offers the following accesses:

- Layer 2: Interfacing for PC networks in an industrial environment.

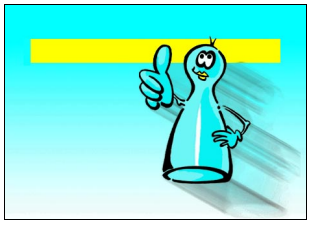
- Level 4 and level 7. In conjunction with SOFTNET packages for Industrial Ethernet, the CP 1411 offers low-cost access to Industrial Ethernet, e.g. for SIMATIC S5/S7.

In addition, the protocols for Industrial Ethernet provided by the operating system are also supported.

The AUI interface under Windows 2000 Professional is not supported.

CP 1411 communication processor

Designed for Industry



- Universal connection possibilities (AUI, ITP or RJ45)
- Optimized for SOFTNET.
- Ideal for small installations.

Technical specifications

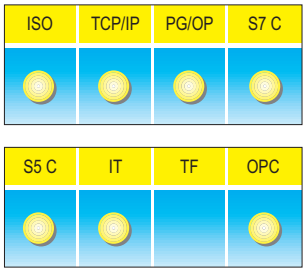
Transmission rate		10 Mbit/s
Interfaces		
• Connection to Industrial Ethernet		15-pin Sub-D socket (autom. switching between AUI and Industrial Ethernet pair)
• Connection to 10BaseT		RJ45
Supply voltage		+5 V DC ±5% 12 V DC ±5%
Current consumption		
• from 5 V DC	approx.	100 mA
• from 12 V DC	max.	500 mA
Power loss		0.5 W
Perm. ambient conditions		
• Operating temperature		+5 °C to +40 °C
• Transportation/storage temperature		–40 °C to +70 °C
• Relative humidity	max.	95% at +25 °C
Construction		
• Module format		Short AT format
• Dimensions (H x D) in mm		107 × 15
• Weight	approx.	100 g
• Space requirements		1 × ISA slot

Ordering data

	Order No.
CP 1411 ISA card for connecting a PG/PC to Industrial Ethernet	**6GK1 141-1AA00**
SOFTNET-S7/Windows 98, NT 4.0, 2000 Pro for Industrial Ethernet V3.3 via ISO or TCP/IP, Software for S5-compatible communication (SEND/RECEIVE) and S7 communication, incl. OPC server, for CP 1411/CP 1511 with electronic manual on CD-ROM German/English	
• Version up to 8 connections (S7)	**6GK1 704-1CW33-3AA0**
SOFTNET-PG/Windows 98, NT 4.0, 2000 Pro for Industrial Ethernet Software V3.3 for PG/OP communication (STEP 5 from V7.1; STEP 7 from V4.02 and K4.02.5), for SIMATIC S5/S7 incl. OPC server, for CP 1411/CP 1511, with electronic manual on CD-ROM German/English	**6GK1 704-1PW33-3AA0**
SOFTNET Manual for Industrial Ethernet Hardcopy Including: Description of the interfaces (S7, S5-compatible communication), OPC server, configuring tool	
• German	**6GK1 971-1EA00-0AA0**
• English	**6GK1 971-1EA00-0AA1**
SIMATIC NET Software Update Service for Industrial Ethernet, PROFIBUS, OPC server, including manuals on CD-ROM	**6GK1 704-0AA00-3AA2**
Electronic Manuals Communications systems, protocols, products on CD-ROM German/English	**6GK1 975-1AA00-3AA0**

CP 1511 communication processor

Overview





- For connecting programming devices/ notebooks with PCMCIA slot to Industrial Ethernet
- Communication services via ISO or TCP/IP transport protocols
  - PG/OP communication
  - S7 communication
  - S5-compatible communication (SEND/RECEIVE)
- Designed for use in industrial environments.
- PCMCIA card type II.
- Interfaces: Industrial Twisted Pair, RJ45 (for office applications).
- OPC servers are supplied with the communication software

Application

The CP 1511 is an Ethernet card which can be operated in any programming device/PC with a free PCMCIA type II slot.

In conjunction with all SOFTNET packages for Industrial Ethernet (except UNIX), the CP 1511 can be used e.g. in a programming device 720 for remote programming (PG/OP communication).

The CP 1511 can be operated in any computer with a slot complying with the PCMCIA 2.0 standard.

Two adapters are supplied. One adapter is designed for connecting to RJ45, another adapter offers an interface for industrial twisted pair.

Design

- PCMCIA card type II.
- 15-pin Sub-D socket for industrial twisted pair

There are no jumpers on the module, it can be set completely by software.

Application

The CP 1511 offers the following accesses:

- Layer 2: Interfacing for PC networks in an industrial environment.
- Level 4 and level 7. In conjunction with the SOFTNET packages for Industrial Ethernet, the CP 1511 offers low-cost access to Industrial Ethernet, e.g. to the SIMATIC S5/S7.

In addition, the protocols for Industrial Ethernet provided by the operating system are also supported.

The CP 1511 is not supported under the Windows 2000 Pro operating system.

Configurations

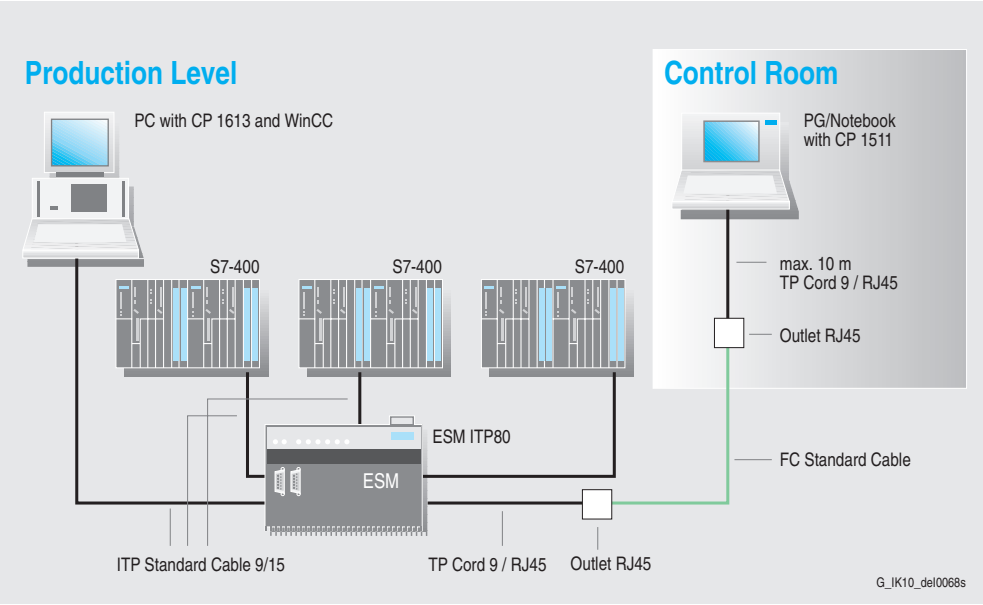
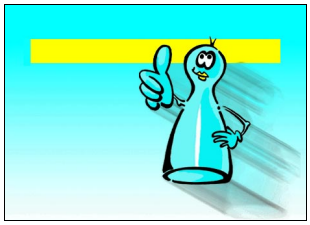


Fig. 4/61 System configuration with CP 1511

4

Designed for Industry



- Universal connection possibilities (ITP or RJ45)
- Optimized for SOFTNET.
- Ideal for small installations.
- Use in programming devices/notebooks.

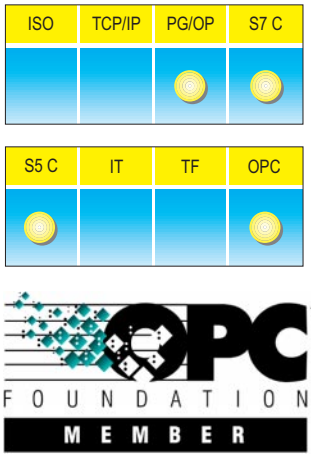
Technical specifications

Transmission rate		10 Mbit/s	
Interfaces			
• Connection to ITP		15-pin Sub-D socket	
• Connection to 10BaseT		RJ45	
• Connection to PG/PC		PCMCIA slot type II	
Supply voltage		+5 V DC, ±5%	
Current consumption	max.	0.18 A	
Perm. ambient conditions			
• Operating temperature		+5 °C to +40 °C	
• Transportation/storage temperature		–20 °C to +60 °C	
• Relative humidity	max.	90% at +25 °C	
Construction of the CP 1511			
• Module format		PCMCIA type II	
• Dimensions (H × W × D) in mm		85.6 × 54 × 5	
• Weight		approx. 30 g	
• Space requirements		1 × PCMCIA slot type II	
Construction of adapter		**ITP**	**RJ45**
• Dimensions (H × W × D) in mm		60 × 40 × 18	40 × 22 × 20
• Weight		100 g	40 g
• Line length		50 cm	20 cm

Ordering data

	Order No.
CP 1511 ▶ PCMCIA card for the connection of PG/PC to Industrial Ethernet, including 2 adapters for ITP and RJ45	**6GK1 151-1AA00**
SOFTNET-S7/Windows 98, NT 4.0, 2000 Pro for Industrial Ethernet German/English	
• Version up to 8 connections (S7) ▶	**6GK1 704-1CW33-3AA0**
SOFTNET-PG/Windows 98, NT 4.0, 2000 Pro for Industrial Ethernet ▶ German/English	**6GK1 704-1PW33-3AA0**
SIMATIC NET Software Update Service ▶ for Industrial Ethernet, PROFIBUS, OPC server, including manuals, on CD-ROM, German/English	**6GK1 704-0AA00-3AA2**
CP 1613 and SOFTNET Manual for Industrial Ethernet Hardcopy	
• German ▶	**6GK1 971-1GA00-0AA0**
• English ▶	**6GK1 971-1GA00-0AA1**
Electronic Manuals ▶ Communications systems, protocols, products on CD-ROM German/English	**6GK1 975-1AA00-3AA0**

Overview



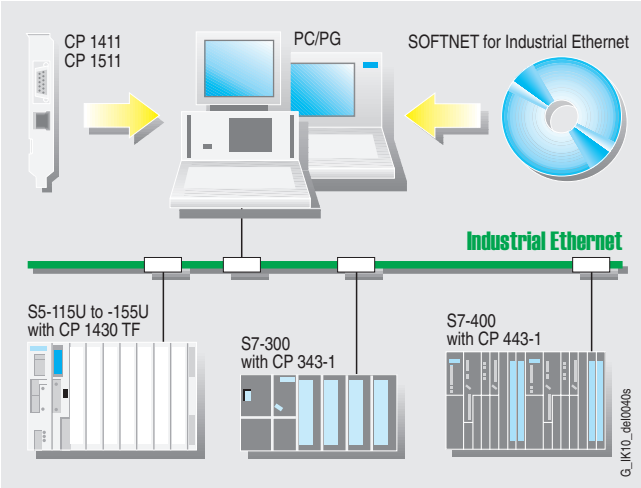


Fig. 4/62 SOFTNET for Industrial Ethernet system configuration

- For connecting programming devices/PCs/ workstations with automation systems.
- Communication services:
  - PG/OP communication
  - S7 communication
  - S5-compatible communication (SEND/RECEIVE)
- Can be used in conjunction with CP 1411 (ISA), CP 1511 (PCMCIA).
- Modem (Remote Access Service RAS)
- Complete protocol stack as software package.
- OPC servers are supplied with the communication software

Application

With SOFTNET for Industrial Ethernet, programming devices/PCs/workstations can be connected to PLCs, e.g. SIMATIC S7, via Industrial Ethernet. The following application interfaces are available:

- PG/OP communication for SIMATIC S7
- S5-compatible communication (SEND/RECEIVE) for communication with SIMATIC S7
- S7 communication

SOFTNET is available for the following interfaces:

- CP 1411 (ISA card)
- CP 1511 (PCMCIA card).
- Modem (RAS)

Application

With SOFTNET, the complete protocol stack is handled by the PC.

Unlike the 1613 products, the performance capability of the SOFTNET packages with this architecture depends on the network extension and/or workload of the PC used.

Functions

Software for PG/OP communication

This software allows programming of the SIMATIC S5 and S7 controllers via Industrial Ethernet in conjunction with STEP 5/STEP 7.

Software for S7 communication

SIMATIC S7 system components use S7 communication to communicate with each other.

To allow programming device/PC user programs to have access to the SIMATIC S7/M7 system components, the S7 programming interface was developed.

The S7 communications can optionally be based on the ISO protocol or the TCP/IP protocol.

The interface is supplied as a C library or DLL.

S7 communication offers the following services:

- Administrative services
- S7 connection management services
- Variables services
- VFD (virtual field device) services
- Trace and Mini database.

S5-compatible communication (SEND/RECEIVE)

This layer 4 based interface (ISO transport or TCP/IP with RFC 1006) is used for communication between

- PG/PC and SIMATIC S5
- PG/PC and SIMATIC S7
- PG/PC and PG/PC.

S5-compatible communication (SEND/RECEIVE) provides the following services:

- Management services.
- Link connection service.
- Data transfer services

User interfaces

OPC interface

The OPC server contained in the respective software package can be used as a standard programming interface for the protocols S7 communication and S5-compatible communication to connect automation applications to OPC-capable Windows applications (Office, HMI systems etc.).

Programming interface via C library

The programming interfaces for the protocols S7 communication, PG/OP communication, S5-compatible communication and TF protocol for existing applications are implemented as a Dynamic Link Library (DLL).

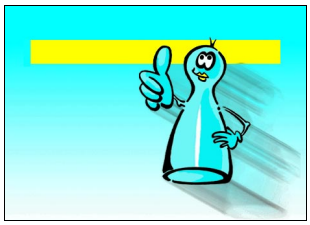
The following compilers can therefore be used in conjunction with the SIMATIC NET products:

- Microsoft Visual C/C++ V6.0
- Microsoft Visual Basic V6.0

Configuration

For the relevant packages the necessary configuring tools are contained in the scope of supply.

Designed for Industry



- Communication with SIMATIC via standard Ethernet cards (NE 2000-compatible).
- Can be used in notebooks with PCMCIA slot.
- Optimized for small installations.

Technical specifications

Performance data		
S7 and PG/OP communication		
• SOFTNET-S7: Number of operable connections	max.	8

Ordering data

	Order No.
SOFTNET-S7/Windows 98, NT 4.0, 2000 Pro for Industrial Ethernet V3.3 Software for S5-compatible communication (SEND/RECEIVE) and S7 communication, incl. S7-OPC server, for CP 1411/CP 1511 with electronic manual on CD-ROM German/English	
▶ • Version up to 8 connections (S7)	**6GK1 704-1CW33-3AA0**
▶ **SOFTNET-PG/Windows 98, NT 4.0, 2000 Pro for Industrial Ethernet** Software V3.3 for PG/OP communication (STEP 5 from V7.1; STEP 7 from V4.02 and K4.02.5), for SIMATIC S5/S7, for CP 1411/CP 1511, with electronic manual on CD-ROM German/English	**6GK1 704-1PW33-3AA0**
CP 1613 and SOFTNET Manual for Industrial Ethernet Hardcopy Including: Description of the interfaces (S7, S5-compatible communication), OPC server, configuring aid	
▶ • German	**6GK1 971-1GA00-0AA0**
▶ • English	**6GK1 971-1GA00-0AA1**
▶ **Electronic Manuals** Communications systems, protocols, products on CD-ROM German/English	**6GK1 975-1AA00-3AA0**
▶ **SIMATIC NET Software Update Service** for Industrial Ethernet, PROFIBUS, OPC server, including manuals on CD-ROM	**6GK1 704-0AA00-3AA2**

Overview

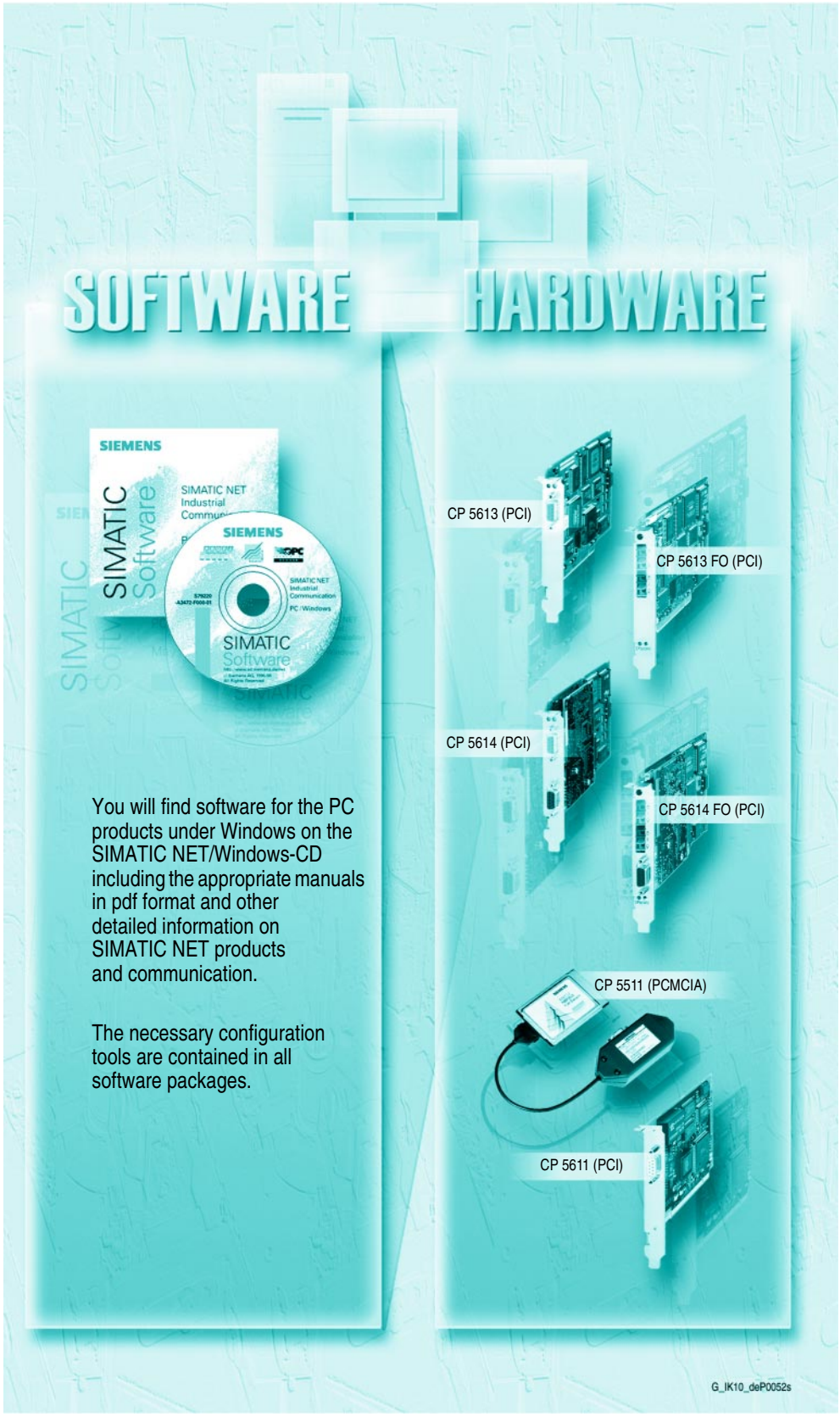


Fig. 3/108 System interfacing for PG/PC

PC card with its own microprocessor

Recommended solution for:

- PC-based control systems (Soft Control, PLC, Numeric Control, Robot Control)
- Process control systems
- Human Machine Interface (HMI)
- PROFIBUS systems with a large quantity framework (more than 8 stations)
- Multi-protocol operation
- Use of several CPs in one computer
- Versions with Fiber Optic interface (FO)

PC card without its own microprocessor

Recommended solution for:

- Configuration tools (e.g. STEP 7)
- PROFIBUS-DP diagnostics station (e.g. with COM PROFIBUS or as a DP master class 2)
- PROFIBUS-DP slave connection
- PROFIBUS systems with up to 8 stations
- Monoprotocol mode

3

Performance of the PROFIBUS-CP

The maximum data throughput indicates how many digital input/output files can be read or written to or from the PROFIBUS application in 1 ms through the applicable PROFIBUS-CP (regardless of the physical characteristics of the bus).

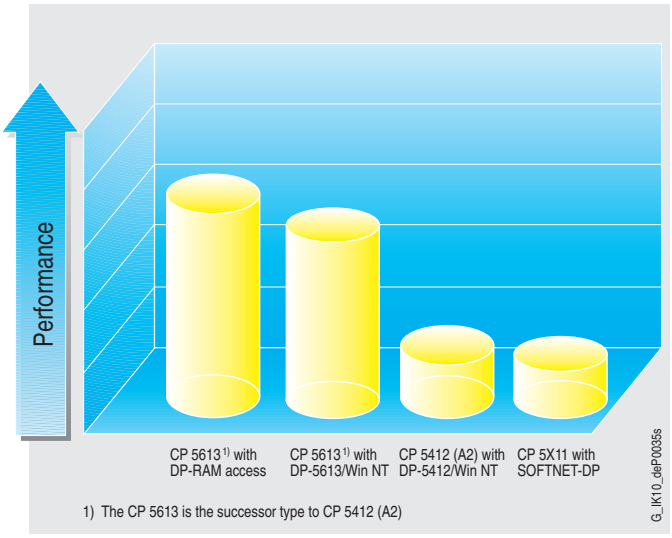


Fig. 3/109 Performance in the case of almost equal CPU loading

CPU loading and access time

A comparison of event access (through Interrupt) and polling access shows that the CPU loading in CP 5613 can be reduced considerably using the event/filter mechanism; at the same data throughput.

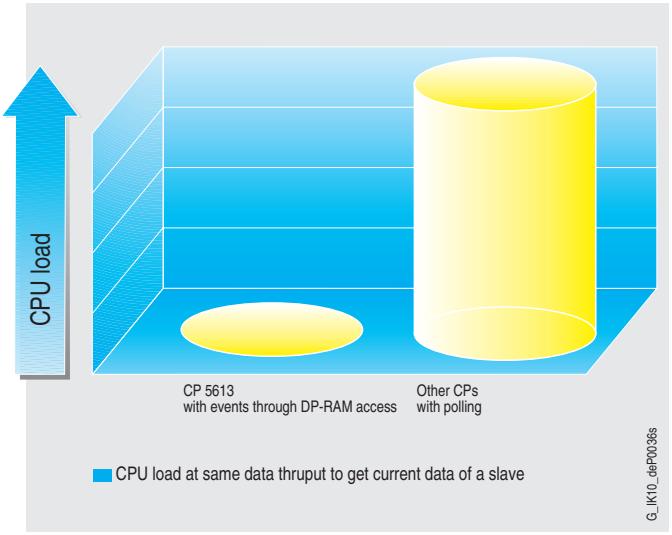


Fig. 3/110 Comparison of CPU loading for event/polling access

Performance data of the PROFIBUS-CP

		CP 5613/CP 5613 FO	CP 5614/CP 5614 FO	CP 5412 (A2)	CP 5611	CP 5511
No. of connectable DP slaves	max.	122	122	64	60	60
No. of parallel FDL tasks to be processed	max.	120	120	118	100	32
No. of PG/OP and S7 connections	max.	50 1)	50 1)	29	8	8
No. of FMS connections	max.	40 2)	40 2)	32	–	–

Note:
The CP 5613 is the successor type to CP 5412 (A2)
1) for credit = 1; PDU size ≤ 480 byte
2) for credit = 1

Overview

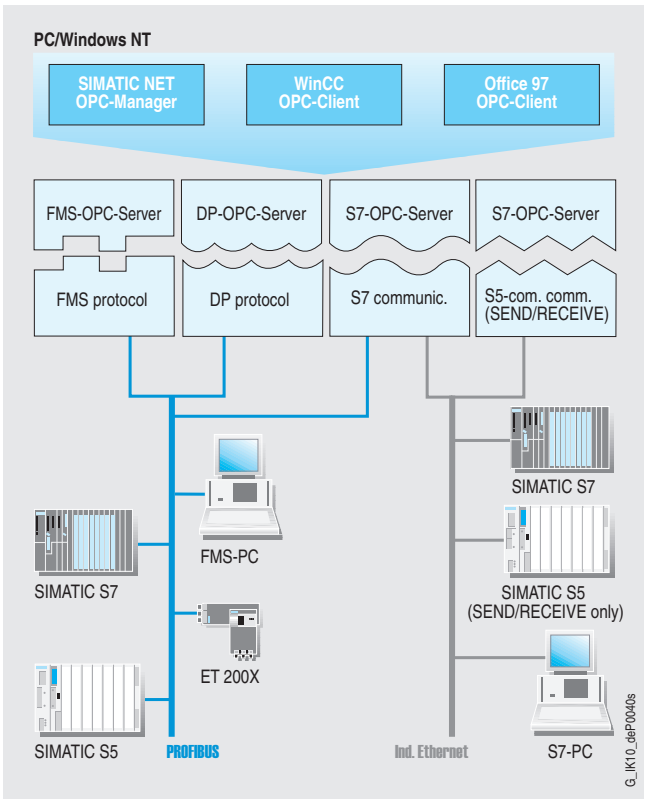


Fig. 3/111 System integration with OPC server

- OPC servers are supplied with the communication software
- Standard, open, manufacturer-independent interface
- Interfacing of OPC-capable Windows applications to S7 communication and S5-compatible communication (SEND/RECEIVE).
- Builds upon software programming interfaces.
- Efficient data exchange for Windows NT 4.0 and Windows 2000 Pro
- OPC scout with browser function as OPC client and OCX data control

Application

Under Windows NT, OPC (OLE for Process Control) can be used as an extension to the communications interfaces COM (Component Object Model) and DCOM (Distributed COM) for the user software.

The basic principle of OPC is that OPC client applications can communicate with the OPC server through a standard / open and thus manufacturer-independent interface.

Connection to OPC-compatible Windows applications already on the market (Office 97 or HMI systems) is possible.

The following OPC servers are available:

PROFIBUS:

- DP-OPC server for PROFIBUS-DP
- FMS-OPC server for PROFIBUS-FMS
- S7-OPC servers for S7 communication, alarms and events as well as S5-compatible communication (SEND/RECEIVE)

The OPC servers have:

- Standardized access to SIMATIC S7 and SIMATIC S5 for OPC-compatible applications under Windows NT
- Consistency between automation products from different manufacturers

- The same simple-to-use user interface for different components.
- Accessibility from every computer in the LAN/WAN
- High-performance data access through the Custom Interface (C++)
- Easy to use through the “Automation Interface” (VB) or OCX data control, which is supplied
- Grouping of variables (items), whereby a large number of data can be processed in a short time

Functions

- Open standardization of addressing using logical names for objects of an automation component or system.
- Support of symbols from STEP 7
- Efficient data exchange from a process component to a further processing application
- Simultaneous use of several servers by one client application
- Several clients can run on one OPC server at the same time
- Server-specific configuration support

Functions
(continued)

- Interfaces
  - "Custom Interface" for high-performance C++ applications
  - "Automation Interface" for easy-to-create Visual Basic or similar applications
  - OCX data control for direct integration in Windows applications that support COM/DCOM

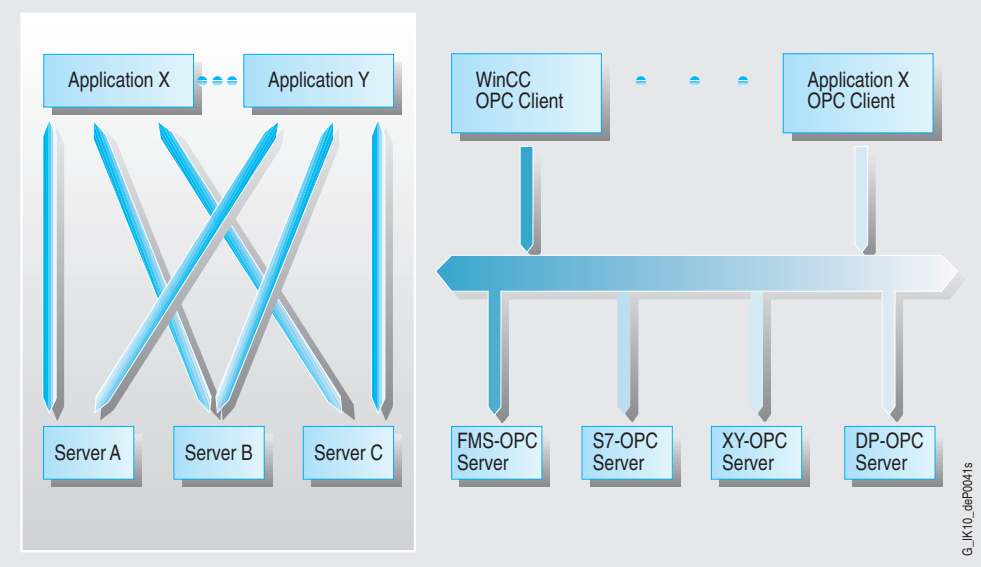


Fig. 3/112 Comparison of conventional client/server architecture with an OPC architecture

Configuration

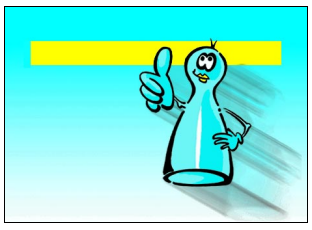
The communications parameters can be completely configured using the tools in the software which is already installed.

The following demo programs are supplied as standard:

- For custom interface in C++
- For "Automation Interface" with Visual Basic

- Other compilers can be implemented through the OPC server, however, the compiler must support the COM interface (Microsoft Component Object Model)

Designed for Industry



- Simple use of different networks and protocols through standard interface.
- Reduced training and learning requirements.

- Easy integration in the system environment and office applications through C++ and Visual Basic interface
- Short programming times for applications.

- Easy to handle and cost-effective because the OPC servers are supplied with the communication software

Technical specifications – OPC server

Programming	• Open and standardized • Can be used with different manufacturers' systems • Variable (item) groups
Access to	• One set of variables, enabling processing of large data volumes in a short time
Interfaces	• Custom Interface (C++); OPC is therefore powerful • Automation Interface (VB, Excel, Access, Delphi, etc.); therefore easy to use • Graphics with OCX; allowing configuration instead of programming
Protocols	• DP protocol • S7 communication • FMS protocol • S5-compatible communication (SEND/RECEIVE)
Availability	• Windows NT 4.0, 2000 is automatically available for all applications after installation

Product versions

Product	contains OPC servers for:
DP-5613	PROFIBUS-DP
S7-5613	S7 communication
FMS-5613	FMS communication
SOFTNET-S7 for PROFIBUS	S7 communication
SOFTNET-DP	PROFIBUS-DP
SOFTNET-DP slave	PROFIBUS-DP slave
CP 5613/5614 and CP 5613 FO/5614 FO with DP-Base software	S5 compatible communication (FDL) PROFIBUS-DP (master) Access to DP slave of the CP 5614

Advanced PC Configuration

Overview



- Advanced PC Configuration is included in delivery of the communications software from version 6.0 onwards.
- Simple handling thanks to automatic software installation, Plug & Play and user-prompted commissioning
- Simple, consistent and cost-effective configuration and planning and design of a PC station
- Considerably simplified OPC configuration
- Advanced PC Configuration is delivered with the new configuring tool NCM PC and the Startup Wizard and Configuration Console tools.

3

Application

- Advanced PC Configuration represents a new, simple, consistent and cost-effective startup and diagnostics of a PC station.
- The Startup Wizard, Configuration Console and NCM PC mark the launch of a whole new world of tools.
- The Startup Wizard guides the user through all the steps necessary to achieve a ready-to-run PC station
- The Configuration Console is the central tool for configuration settings and diagnostics
- NCM PC V5.1+SP2 offers a new configuring tool for STEP 7-compatible PC configuration

Functions

Startup Wizard

- Simple and consistent startup of all modules and applications supported by Advanced PC Configuration.
- A wizard that takes the user step-by-step through the installation and configuration of the PC station.

Configuration Console

The Configuration Console is a snap-in embedded in the Microsoft Management Console that offers a range of options for the configuration and diagnostics of PC hardware components and PC applications.

Settings on the OPC servers delivered with the communications software are also executed through the Configuration Console.

Functions
(continued)

NCM PC

NCM PC replaces the previous PC configuration tools COML S7 and COM PROFIBUS PC Edition. In future, PC configuration can be carried out in either STEP 7 or NCM PC, version V5.1+SP2 or higher. Both tools offer the same look & feel and create the same database. This ensures consistent configuration of protocols for S5-compatible communication, S7 communication, DP protocols and FMS protocols. No further need for multiple entries and data consistency is automatically ensured.

- A configuration wizard integrated in NCM PC also ensures user-prompted configuration of the PC station.
- With NCM PC and STEP 7, from Version V5.1+SP2, a PC can be configured in the same way as a SIMATIC S7 station and loaded through the network. This applies both to the local station on which NCM PC or STEP 7 is installed and the remote station that is operated through the network.

Note:
NCM PC does not contain a conversion for LDBs that were created with COM PROFBUS or COML S7. In this case these must be reconfigured.

For further information on Advanced PC Configuration and the previous versions of PC/Windows software products
please visit us in the Internet at:



http://www.siemens.de/simatic-net/ik-info

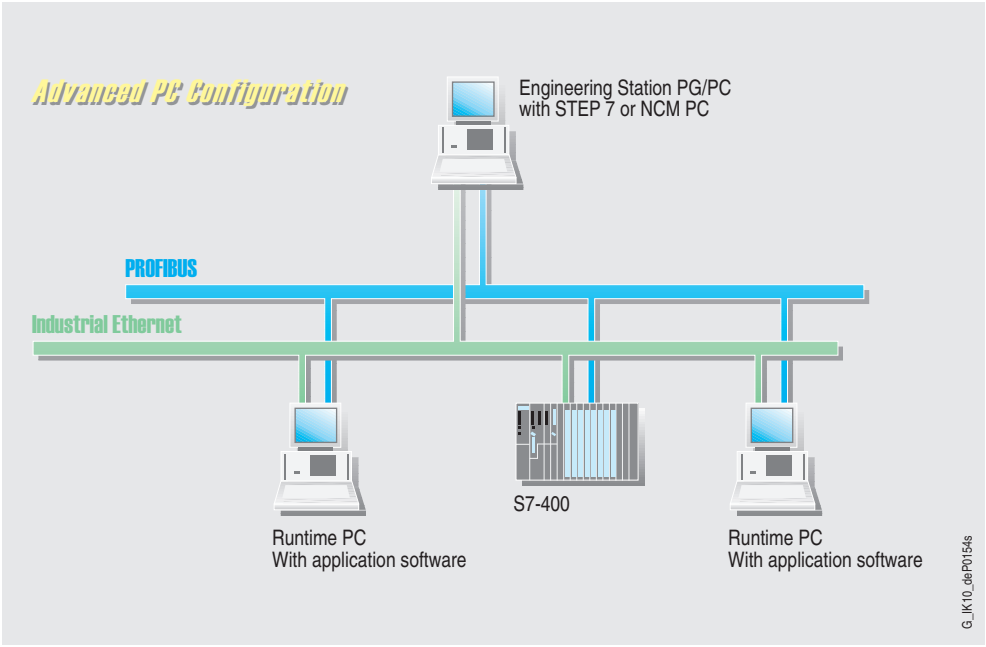
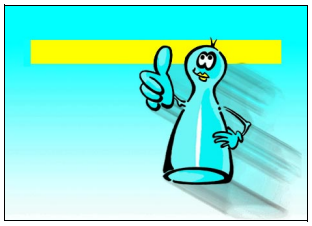


Fig. 3/113 PC configuration with STEP 7 or NCM PC

Advanced PC Configuration

Designed for Industry



- Simple use of different networks and protocols through standard configuration.
- Reduced training and learning requirements.
- Short setting times for communication
- Uniform procedure and configuration functionality, as for STEP 7

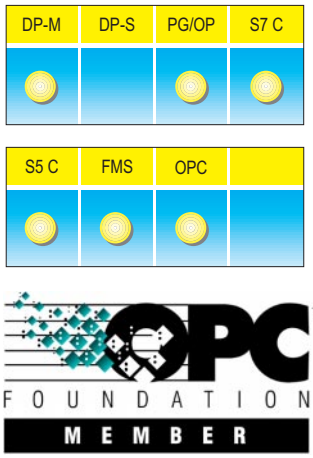
Technical specifications – Advanced PC Configuration

Supported modules	• CP 5511, CP 5611, CP 5613, CP 5613 FO, CP 5614, CP 5614 FO • CP 5611 compatible PROFIBUS interfaces of PCs/PGs
Protocols	• S5-compatible communication • S7 communication • DP • FMS
Operating systems	• Windows NT 4.0 SP 6a • Windows 2000 +SP1 for Professional and servers

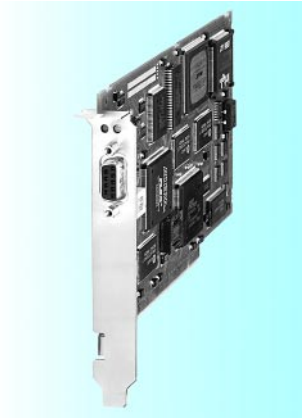
Ordering data

	Order No.
Advanced PC Configuration	Included in delivery are the following products: • S7-5613 • DP-5613 • FMS-5613 • SOFTNET-DP slave for PROFIBUS • SOFTNET-DP for PROFIBUS • SOFTNET-S7 for PROFIBUS • SIMATIC NET CD 07/2001 Upgrade

Overview



OPC FOUNDATION MEMBER



- PCI card with microprocessor for system interfacing for PCs and SIMATIC programming devices/PC to PROFIBUS up to 12 Mbit/s
- Communication services:
  - PROFIBUS-DP master according to IEC 61158/EN 50170
  - PG/OP communication with STEP 5 and STEP 7
  - S7 communication
  - S5-compatible communication (SEND/RECEIVE) on the basis of the FDL interface
  - PROFIBUS-FMS according to IEC 61158/EN 50170
- Extensive diagnostic facilities for installation, commissioning and operation of the module
- High performance through direct dual port RAM-access
- Event and filter mechanism for relieving the host CPU.
- OPC servers are supplied with the communication software

Application

The CP 5613 enables connection to PROFIBUS for SIMATIC PG/PC and PCs with PCI slot under Windows NT 4.0 and Windows 2000.

The CP 5613 provides high performance support for control tasks on the PC (e.g. PC-based control, numeric control, robot control).

Design

- Short PCI card
- 9-pin Sub-D socket for connecting to PROFIBUS
- Diagnostic LEDs.
- Parallel operation of max. 4 CPs [1)]

The module is installed using PCI standard mechanisms (plug & play).

1) FMS-5613 supports a maximum 2 CP 5613/5614.

It is connected to the electrical PROFIBUS through

- Bus connector and PROFIBUS bus cable or
- Bus terminal (e.g. 12M bus terminal) and PROFIBUS bus cable.

It is connected to the optical PROFIBUS through:

- Bus cable with 2 bus connectors or
- 830-1T PROFIBUS connecting cable

to an OLM.

It is connected to the optical PROFIBUS with integrated interface and OBT through:

- Bus cable with 2 bus connectors or
- 830-1T PROFIBUS connecting cable

to an optical bus terminal (OBT) for PROFIBUS-DP.

Direct connection to the optical PROFIBUS with integrated interface through CP 5613 FO.

Functions

PROFIBUS-DP

Access to process data with DP-Base

The CP 5613 is operated as a PROFIBUS-DP master module which holds the process image (input/output and diagnostic data) in the dual port RAM (memory area on the CP). The high-performance data exchange with the PROFIBUS slaves is handled independently by the CP 5613 hardware.
The user has direct access to the dual port RAM.

The process data of the slaves are always consistent, i.e. the user gets the data from one and the same DP cycle.

Parallel operation of DP-Base and DP 5613 software is not possible.

Event/filter mechanism

The user receives up-to-date data through two access mechanisms:

- Cyclic polling of the DP slaves (higher load on host CPU)
- Signaling through new kind of event/filter mode in the event of changes in the input data of a slave (minimum load on host CPU)

Both alternatives can be combined. Optimum utilization of the PC is therefore possible for the relevant application.

The new event/filter mechanism also can be used for

- Signaling by interrupt for diagnostic messages from slaves
- In equidistant mode signaling by interrupt:
  - Start DP cycle
  - End of cyclic data exchange with the DP slaves (from hardware version 3, available soon)

Equidistant operation adjustable with STEP 7 V5.1 or higher or NCM PC V5.1+SP2.

Functions
(continued)

FastLogic
(rapid shutdown)

FastLogic means that the CP 5613 can react automatically to up to 4 plant states. A fast response time and independence of the host application is achieved here, for example, for rapid equipment shutdown.

DP programming interface

The DP programming interface (DP-Base) of the CP 5613 has the following functions:

- DP master class 1 including acyclic DP extensions.
- DP master class 2 (available soon) incl. acyclic expansions

Access to the process data is directly through the dual port RAM. The dual port RAM interface not only offers fast access as a DP master but also a basis for portability to other operating system environments (e.g. VXWorks, QNX, RMOS).

A library (DP_BASE.DLL) offers administrative functional calls (initialization and management services).

Development kit DK-5613

The development kit DK-5613 offers access to the functions DP master class 1 including non-cyclic DP expansions

With the software development kit DK-5613 the communications processors CP 5613 and CP 5614 can be integrated in any operating system environments. The kit contains the necessary source code including the descriptions in PDF format and can be downloaded from Internet.

Access to process data with DP-5613

The user interface is compatible with software package DP-5412.

- DP master class 1

The CP 5613 operates as a DP master class 1 according to IEC 61158/EN 50170 and handles data transfer with the distributed stations (DP slaves) completely independently. In a fixed, repetitive message cycle, the central controller exchanges information with the DP slaves (e.g. ET 200S). The DP programming interface (DPLib.DLL) provides the PC programmer with function calls for data transfer. In addition, the DP interface offers the functions SYNC and FREEZE as well as the activation and deactivation of slaves.

The DP functional expansions with respect to master class 1 enable non-cyclic read and write functions (DS_READ, DS_WRITE) as well as alarm acknowledgement (ALARM_ACK) to be performed parallel to cyclic data traffic. The non-cyclic transmitted data (e.g. parameterization data) are changed very rarely in comparison with the cyclic measured values and are transmitted with low priority parallel to the fast cyclic useful data transfer. Interrupt acknowledgment in the master ensures reliable transfer of the interrupts from DP slaves (DS_READ, DS_WRITE, DS_DATA_TRANSPORT).

Parallel operation of DP-Base and DP 5613 software is not possible.

- DP master class 2

In addition to DP master class 1 services, the CP 5613 also offers DP master class 2 services in connection with the DP programming interface according to IEC 61158/EN 50170. Devices of this type (programming, configuration or operating devices) are used for commissioning, configuring the DP system or system operation in normal operation (diagnostics).
The DP programming interface provides the following services:

- Master diagnostics
- Slave diagnostics
- Read inputs/outputs of a slave
- Reading configuration data and
- Changing the slave address.

The extended DP functions also include non-cyclic access to the parameters and measured values of a slave (e.g. field devices of the process automation, intelligent HMI devices.
This type of slave must be supplied with extensive parameter data during startup and normal operation (DS_READ, DS_WRITE, DS_DATA_TRANSPORT).

Software for PG/OP communication

This software enables programming of the SIMATIC S5/S7 controllers through PROFIBUS in connection with STEP 5/STEP 7. The PG/OP communication for the CP 5613 is already available after installing the CP 5613 (DP-Base).
No additional software package is needed.

S5-compatible communication (SEND/RECEIVE based on the FDL interface)

SEND/RECEIVE (FDL interface) is already available after installation of the CP 5613 (DP-Base) and offers data exchange services for diagnostics and management.
No additional software package is needed.

Functions
(continued)

Software for S7 communication (S7-5613)

The user interface is compatible with software S7-5412.

SIMATIC S7 system components communicate with each other through S7 communication. The S7 programming interface enables PG/PC application programs access to SIMATIC S7 system components. The SIMATIC S7 data can be accessed easily and flexibly.

The following services are available with S7 communication:

Administrative services

- Link management
- Mini database
- Trace.

Data transfer services

- Reading/writing of variables
- BSEND/BRECEIVE (up to 64 KB per task).

Software for PROFIBUS-FMS interface (FMS-5613)

The user interface is compatible with software FMS-5412.

With the FMS programming interface, AT-compatible PCs can exchange data with FMS-capable controllers (e.g. S5/S7) and field devices of other manufacturers. The use of the FMS protocol ensures open communication.

The following services are available through the FMS interface:

- Administrative services
- CRL management services
- FMS connection management services
- Object directory management services for clients and server.
- Variable services for clients and server (read, write, information report).
- Server functionality
- VFD (virtual field device) services for clients and server.
- Bus access information services (live list).
- Trace and mini database

User interfaces

- OPC interface

The OPC server contained in the respective software package can be used as a standard programming interface for the protocols PROFIBUS-DP, S7 communication and PROFIBUS-FMS to connect automation applications to OPC-capable Windows applications (Office, HMI systems etc.).

- Programming interface through C-Library

The programming interfaces for existing applications are implemented as a Dynamic Link Library (DLL). The following compilers can therefore be used in conjunction with the SIMATIC NET products:

- Microsoft Visual C/C++ V6.0
- Microsoft Visual Basic V6.0

Partner solutions from AIXO are available for Borland programming interfaces (e.g. DELPHI).

For solutions for other operating systems, see the development kit DK-5613.

The DK-5613 can be found in the Internet at:



http://www.siemens.de/simatic-net/dk5613

Configuration

- Configuration of S7 communication protocols, S5-compatible communication, DP protocol (DP/DPV1/DPV2) and FMS protocol is executed in STEP 7/NCM PC, V5.1+SP2 or higher.
- The configuring tool NCM PC is included in delivery of the PROFIBUS software package.
- NCM PC is a component of Advanced PC Configuration.

Diagnosis

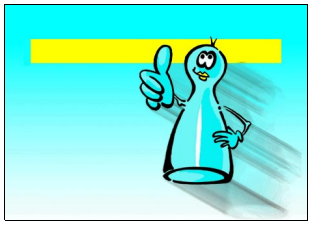
Extensive diagnostic tools are available (for installation, commissioning and operation) for the module itself and for the PROFIBUS network.

Therefore a PROFIBUS network can be started up quickly and easily with a CP 5613.

Connection options for PG/PC

CP 5613 communications processor

Designed for Industry



- Fastest possible access to process data through dual port RAM
- Short response time with FastLogic
- Process-consistent data from a DP cycle
- Higher computing performance in the PC by relieving the host CPU.
- Fast commissioning through Plug&Play and diagnostic tools
- Implementation for motion control applications possible through support of the equidistant mode
- Easy portability to other operating systems through a dual port RAM interface
- Can also be used in high temperature industrial environments.

Technical specifications

Baud rates		9.6 kbit/s to 12 Mbit/s
Interfaces		
• Connection to PROFIBUS		9-pin Sub-D socket
Supply voltage (from PCI)		5 V DC ±5%
Power consumption from 5 V		1.3 A
Power loss		6.5 W
Perm. ambient conditions		
• Operating temperature		
– Without fan		+5 °C to +40 °C
– With fan (air current 0.5 m/s)		+5 °C to +60 °C
• Transport/storage temperature		–40 °C to +70 °C
• Relative humidity	max.	95% at +25 °C
Design		
• Module format		PCI card
• Dimensions (W × H) in mm		107 × 168
• Weight	approx.	250 g
• Space required		1 × PCI slot
Performance data Single protocol mode		
• No. of connectable DP slaves	max.	122
• No. of parallel FDL tasks to be processed	max.	120
• No. of PG/OP and S7 connections	max.	50 1)
• No. of FMS connections	max.	40 2)

1) For credit = 1; PDU size ≤ 480 byte

2) For credit = 1

Ordering data

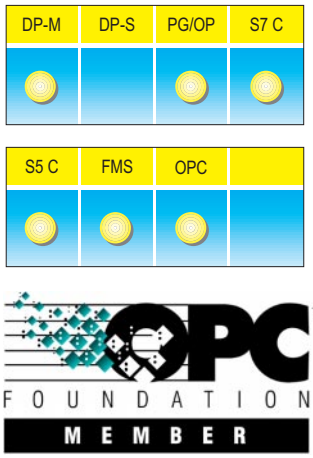
	Order No.
CP 5613 communications processor ▶ PCI card for connection to PROFIBUS incl. Windows NT 4.0 WS, server, Windows 2000 Pro, server driver, DPRAM Interface for DP master incl. PG and FDL, configuration software; with electronic manual; on CD-ROM	**6GK1 561-3AA00**
Development kit DK-5613 Software development kit for CP 5613/CP 5614/CP 5613 FO/ CP 5614 FO for integration in any operating system environments on systems with PCI slot Download from Internet at: http://www.siemens.de/simatic-net/dk5613	

Ordering data

	Order No.
DP-5613/Windows V6.0 ▶ Software for DP protocol incl. PG/OP communication, FDL, DP-OPC server; NCM PC under Windows NT 4.0 WS, server; Windows 2000 Pro, server; for CP 5613/ CP 5614/CP 5613 FO/CP 5614 FO; with electronic manual; on CD-ROM, in German/English	**6GK1 713-5DB60-3AA0**
S7-5613/Windows V6.0 ▶ Software for S7 communication incl. PG/OP communication, FDL, S7-OPC server; NCM PC under Windows NT 4.0 WS, server; Windows 2000 Pro, server; for CP 5613/ CP 5614/CP 5613 FO/CP 5614 FO; with electronic manual; on CD-ROM, in German/English	**6GK1 713-5CB60-3AA0**
FMS-5613/Windows V6.0 ▶ Software for FMS protocol incl. PG/OP communication, FDL, FMS-OPC server; NCM PC under Windows NT 4.0 WS, server; Windows 2000 Pro, server; for CP 5613/ CP 5614/CP 5613 FO/CP 5614 FO; with electronic manual; on CD-ROM, in German/English	**6GK1 713-5FB60-3AA0**
Manual CP 5613/CP 5614 and SOFTNET for PROFIBUS Paper version Including: Description of the interfaces (FMS, DP, S7, FDL), OPC server, configuration tools	
• German ▶	**6GK1 971-5DA00-0AA0**
• English ▶	**6GK1 971-5DA00-0AA1**
PROFIBUS FastConnect RS 485 bus connector Plug 180 ▶ With 180° cable outlet	**6GK1 500-0FC00**
PROFIBUS 12M bus terminal ▶ Bus terminal for connecting PROFIBUS stations up to 12 Mbit/s with connecting cable	**6GK1 500-0AA10**
SIMATIC NET Software Update Service ▶ For Industrial Ethernet, PROFIBUS, OPC server, including manuals, on CD-ROM, German/English	**6GK1 704-0AA00-3AA2**
SIMATIC NET Manual Collection ▶ Electronic manuals for communication systems, protocols, products on CD-ROM German/English	**6GK1 975-1AA00-3AA0**

CP 5613 FO communications processor

Overview





- PCI card with microprocessor for system interfacing for PCs and SIMATIC PGs/PC to the optical PROFIBUS with integrated interface up to 12 Mbit/s
- Integrated FOC interface for direct FO connection
- Communication services:
  - PROFIBUS-DP master according to IEC 61158/ EN 50170
  - PG/OP communication with STEP 5 and STEP 7.
  - S7 communication
  - S5-compatible communication (SEND/RECEIVE) on the basis of the FDL interface
  - PROFIBUS-FMS according to IEC 61158/ EN 50170
- Extensive diagnostic facilities for installation, commissioning and operation of the module
- High performance through direct dual port RAM access
- Event and filter mechanism for relieving the host CPU.
- Multiple protocol operation and parallel operation of up to 4 CPs
- OPC servers are supplied with the communication software

3

Application

The CP 5613 FO enables connection to the optical PROFIBUS with integrated interface for SIMATIC PG/PC and PCs with PCI slot under Windows NT 4.0 and Windows 2000.

The CP 5613 FO provides high performance support for control tasks on the PC (e.g. PC- based control, numeric control, robot control).

Design

- Short PCI card
- 2 duplex sockets for connection of plastic and PCF FOCs with 2 simplex plugs each to the optical PROFIBUS
- Connection for external power supply. This means data transmission on the optical line is not interrupted when the PC is switched off.
- Diagnostic LEDs.
- Parallel operation of up to 4 CPs.

The module is installed using standard PCI mechanisms (Plug & Play).

It is connected to the optical PROFIBUS with integrated interface through:

- Plastic and PCF FOCs with simplex plugs.

It is connected to the electrical PROFIBUS through

- Plastic and PCF fiber-optic cable with simplex plugs to an OBT.

Functions

PROFIBUS-DP

Access to process data with DP-Base

The CP 5613 FO is operated as a PROFIBUS-DP master module which holds the process image (input/output and diagnostic data) in the dual port RAM (memory area on the CP). The high-performance data exchange with the PROFIBUS slaves is handled independently by the CP 5613 FO hardware.
The user has direct access to the dual port RAM.

The process data of the slaves are always consistent, i.e. the user gets the data from one and the same DP cycle.

Parallel operation of DP-Base and DP 5613 software is not possible.

Event/filter mechanism

The user receives up-to-date data through two access mechanisms:

- Cyclic polling of the DP slaves (higher load on host CPU)
- Signaling by new kind of event/filter mode in the event of changes in the input data of a slave (minimum load on host CPU)

Both alternatives can be combined. Optimum utilization of the PC is therefore possible for the relevant application.

The new event/filter mechanism can also be used for:

- Signaling by interrupt for diagnostic messages from slaves
- In equidistant mode signaling by interrupt:
  - Start DP cycle
  - End of cyclic data exchange with the DP slaves (from hardware version 3, available soon)

Equidistant operation adjustable with STEP 7 V5.1 or higher or NCM PC V5. 1+SP2.

Functions
(continued)

FastLogic
(rapid shutdown)

FastLogic means that the CP 5613 FO can react automatically to up to 4 plant states. A fast response time and independence of the host application is achieved here, for example, for rapid equipment shutdown.

DP programming interface

The DP programming interface (DP-Base) of the CP 5613 FO has the following functions:

- DP master class 1 including acyclic DP extensions.
- DP master class 2 (available soon) incl. acyclic expansions

Access to the process data is directly through the dual port RAM. The dual port RAM interface not only offers fast access as a DP master but also a basis for portability to other operating system environments (e.g. VXWorks, QNX, RMOS).

A library (DP_BASE.DLL) offers administrative functional calls (initialization and management services).

Development kit DK-5613

The development kit DK-5613 offers access to the functions DP master class 1 including non-cyclic DP expansions

With the software development kit DK-5613 the communications processors CP 5613, CP 5614 and CP 5613 FO/CP 5614 FO can be integrated in any operating system environments. The kit contains the necessary source code including the descriptions in PDF format and can be downloaded from the Internet

Access to process data with DP-5613

The user interface is compatible with software package DP-5412.

- DP master class 1

The CP 5613 FO operates as a DP master class 1 and handles data transfer with the distributed stations (DP slaves) completely independently. In a fixed, repetitive message cycle, the central controller exchanges information with the DP slaves (e.g. ET 200S). The DP programming interface (DPLib.DLL) provides the PC programmer with function calls for data transfer. In addition, the DP interface offers the functions SYNC and FREEZE as well as the activation and deactivation of slaves.

The DP functional expansions with respect to master class 1 enable non-cyclic read and write functions (DS_READ, DS_WRITE) as well as alarm acknowledgement (ALARM_ACK) to be performed parallel to cyclic data traffic. The non-cyclic transmitted data (e.g. parameterization data) are changed very rarely in comparison with the cyclic measured values and are transmitted with low priority parallel to the fast cyclic useful data transfer. Interrupt acknowledgment in the master ensures reliable transfer of the interrupts from DP slaves (DS_READ, DS_WRITE, DS_DATA_TRANSPORT).

Parallel operation of DP-Base and DP 5613 software is not possible.

- DP master class 2

In addition to DP master class 1 services, the CP 5613 FO also offers DP master class 2 services in connection with the DP programming interface according to IEC 61158/EN 50170. Devices of this type (programming, configuration or operating devices) are used for commissioning, configuring the DP system or system operation in normal operation (diagnostics). The DP programming interface provides the following services:

- Master diagnostics
- Slave diagnostics
- Read inputs/outputs of a slave
- Reading configuration data and
- Changing the slave address.

The extended DP functions also include non-cyclic access to the parameters and measured values of a slave (e.g. field devices of the process automation, intelligent HMI devices. This type of slave must be supplied with extensive parameter data during startup and normal operation (DS_READ, DS_WRITE, DS_DATA_TRANSPORT).

Software for PG/OP communication

This software enables programming of the SIMATIC S5/S7 controllers through PROFIBUS in connection with STEP 5/STEP 7. The PG/OP communication for the CP 5613 FO is already available after installing the CP 5613 FO (DP-Base). No additional software package is needed.

S5-compatible communication (SEND/RECEIVE based on the FDL interface)

SEND/RECEIVE (FDL interface) is already available after installation of the CP 5613 FO (DP-Base) and offers data exchange services for diagnostics and management. No additional software package is needed.

Functions
(continued)

Software for S7 communication (S7-5613)

The user interface is compatible with software S7-5412.

SIMATIC S7 system components communicate with each other through S7 communication. The S7 programming interface enables PG/PC application programs access to SIMATIC S7 system components. The SIMATIC S7 data can be accessed easily and flexibly.

The following services are available with S7 communication:

Administrative services

- Link management
- Mini database
- Trace.

Data transfer services

- Reading/writing of variables
- BSEND/BRECEIVE (up to 64 KB per task).

Software for PROFIBUS-FMS interface (FMS-5613)

The user interface is compatible with software FMS-5412.

The FMS programming interface allows AT-compatible PCs to exchange data with FMS-capable controllers (e.g. S5/S7) and field devices of other manufacturers. The use of the FMS protocol ensures open communication.

The following services are available through the FMS interface:

- Administrative services
- CRL management services
- FMS connection management services
- Object directory management services for clients and server.
- Variable services for clients and server (read, write, information report).
- Server functionality
- VFD (virtual field device) services for clients and server.
- Bus access information services (live list).
- Trace and mini database

User interfaces

- OPC interface

The OPC server contained in the respective software package can be used as a standard programming interface for the protocols PROFIBUS-DP, S7 communication and PROFIBUS-FMS to connect automation applications to OPC-capable Windows applications (Office, HMI systems etc.).

- Programming interface through C-Library

The programming interfaces for existing applications are implemented as a Dynamic Link Library (DLL). The following compilers can therefore be used in conjunction with the SIMATIC NET products:

- Microsoft Visual C/C++ V6.0
- Microsoft Visual Basic V6.0

For Borland programming interfaces (e.g. DELPHI) partner solutions of AIXO are available.

For solutions for other operating systems, see the development kit DK-5613.

The DK-5613 can be found in the Internet at:

http://www.siemens.de/simatic-net/dk5613

Configuration

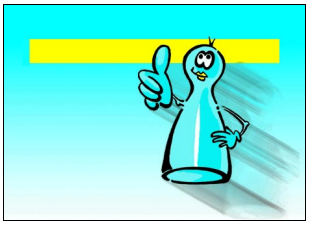
- Configuration of S7 communication protocols, S5-compatible communication, DP protocol (DP/DPV1/DPV2) and FMS protocol is executed in STEP 7/NCM PC, V5.1+SP2 or higher.
- The configuring tool NCM PC is included in delivery of the PROFIBUS software package.
- NCM PC is a component of Advanced PC Configuration.

Diagnosis

Extensive diagnostic tools are available (for installation, commissioning and operation) for the module itself and for the PROFIBUS network.

Therefore a PROFIBUS network can be started up quickly and easily with a CP 5613 FO.

Designed for Industry



- Fastest possible access to process data through dual port RAM
- Short response time with FastLogic
- Process-consistent data from a DP cycle
- Direct connection to the optical PROFIBUS through integrated FOC interface
- Higher computing performance in the PC by relieving the host CPU.
- Fast commissioning through Plug&Play and diagnostic tools
- Implementation for motion control applications possible through support of the equidistant mode
- Easy portability to other operating systems through a dual port RAM interface
- Can also be used in high temperature industrial environments.

CP 5613 FO communications processor

Technical specifications

Baud rates		9.6 kbit/s to 12 Mbit/s
Interfaces		
• Connection to PROFIBUS		2 × duplex socket (FO)
• External power supply (optical) through standard external power supply		Low voltage socket 3.5 mm/1.3 mm ±•)=
Supply voltage from PCI		5 V DC ±5% 12 V DC ±5%
Current consumption		
• from 5 V DC		1.4 A
• from 12 V DC		0.3 A
Power loss		7 W
Supply voltage (optional) external power supply		9 –12 V DC
• Current consumption		0.4 A
• Power loss		3.6 – 4.8 W
Perm. ambient conditions		
• Operating temperature		
– Without fan		+5 °C to +40 °C
– With fan (air current 0.5 m/s)		+5 °C to +60 °C
• Transport/storage temperature		–40 °C to +70 °C
• Relative humidity	max.	95% at +25 °C
Design		
• Module format		PCI card
• Dimensions (W × H) in mm		107 × 168
• Weight	approx.	250 g
• Space required		1 × PCI slot
Performance data Single protocol mode		
• No. of connectable DP slaves	max.	122
• No. of parallel FDL tasks to be processed	max.	120
• No. of PG/OP and S7 connections	max.	50 1)
• No. of FMS connections	max.	40 2)

1) For credit = 1; PDU size ≤ 480 byte

2) For credit = 1

Ordering data

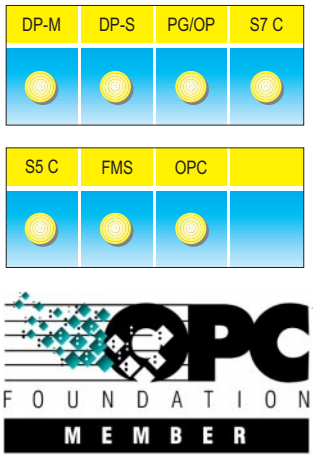
	Order No.
CP 5613 FO communications processor PCI card for connection to PROFIBUS-DP incl. Windows NT 4.0 WS, server, Windows 2000 Pro, server driver, DPRAM Interface for DP master incl. PG and FDL, configuration software; with electronic manual; on CD-ROM	**6GK1 561-3FA00**
Development kit 1) **DK-5613** Software development kit for CP 5613/CP 5614 for integration in any operating system environments on systems with PCI slot	
DP-5613/Windows V6.0 Software for DP protocol incl. PG/OP communication, FDL, DP-OPC server; NCM PC under Windows NT 4.0 WS, server; Windows 2000 Pro, server; for CP 5613/ CP 5614/CP 5613 FO/CP 5614 FO; with electronic manual; on CD-ROM, in German/English	**6GK1 713-5DB60-3AA0**
S7-5613/Windows V6.0 Software for S7 communication incl. PG/OP communication, FDL, S7-OPC server; NCM PC under Windows NT 4.0 WS, server; Windows 2000 Pro, server; for CP 5613/ CP 5614/CP 5613 FO/CP 5614 FO; with electronic manual; on CD-ROM, in German/English	**6GK1 713-5CB60-3AA0**
FMS-5613/Windows V6.0 Software for FMS protocol incl. PG/OP communication, FDL, FMS-OPC server; NCM PC under Windows NT 4.0 WS, server; Windows 2000 Pro, server; for CP 5613/ CP 5614/CP 5613 FO/CP 5614 FO; with electronic manual; on CD-ROM, in German/English	**6GK1 713-5FB60-3AA0**
Manual CP 5613/CP 5614 and SOFTNET for PROFIBUS Paper version Including: Description of the interfaces (FMS, DP, S7, FDL), OPC server, configuration tools	
• German	**6GK1 971-5DA00-0AA0**
• English	**6GK1 971-5DA00-0AA1**
SIMATIC NET Software Update Service For Industrial Ethernet, PROFIBUS, OPC server, including manuals, on CD-ROM, German/English	**6GK1 704-0AA00-3AA2**
SIMATIC NET Manual Collection Electronic manuals for communication systems, protocols, products on CD-ROM German/English	**6GK1 975-1AA00-3AA0**

1) Download from the Internet at

http://www.siemens.de/simatic-net/dk5613

CP 5614 communications processor

Overview





- PCI card with microprocessor for system interfacing for PCs and SIMATIC programming devices/IPC to PROFIBUS up to 12 Mbit/s
- Communication services:
  - PROFIBUS-DP master interface according to IEC 61158/EN 50170 on a PCI card
  - PROFIBUS-DP slave interface according to IEC 61158/EN 50170 on a PCI card
  - PG/OP communication with STEP 5 and STEP 7.
  - S7 communication
  - S5-compatible communication (SEND/RECEIVE) on the basis of the FDL interface
  - PROFIBUS-FMS according to IEC 61158/ EN 50170
- High performance through direct dual port RAM-access
- Event and filter mechanism for relieving the host CPU.
- OPC servers are supplied with the communication software

3

Application

The CP 5614 supports connection to PROFIBUS for SIMATIC PG/IPC and PCs with PCI slot under Windows NT 4.0 and Windows 2000, whereby it can operate both as DP master and as DP slave independently of one another.

This means that two different PROFIBUS networks can be connected to a PC in a hierarchic structure using one PROFIBUS card and data can be exchanged between the networks.

The CP 5614 provides high performance support for control tasks on the PC (e.g. PC based control, numeric control, robot control).

Design

- Short PCI card
- 2 × 9-pin Sub-D sockets for connecting to PROFIBUS
- Diagnostic LEDs.
- Parallel operation of up to 4 CPs.

The module is installed using standard PCI mechanisms (plug & play).

It is connected to the electrical PROFIBUS through

- Bus connector and PROFIBUS bus cable or
- Bus terminal (e.g. 12M bus terminal) and PROFIBUS bus cable.

It is connected to the optical PROFIBUS through

- Bus cable with 2 bus connectors or
- 830-1T PROFIBUS connecting cable

to an OLM.

It is connected to the optical PROFIBUS with integrated interface and OBT through:

- Bus cable with 2 bus connectors or
- 830-1T PROFIBUS connecting cable

to an optical bus terminal (OBT) for PROFIBUS.

Direct connection to the optical PROFIBUS with integrated interface through CP 5614 FO.

Functions

PROFIBUS-DP

Access to process data

The CP 5614 is operated as a PROFIBUS-DP master and DP slave module which holds the process image (input/output and diagnostic data) in the dual port RAM. The high-performance data exchange with the PROFIBUS slaves is handled independently by the CP 5614 FO hardware. The user has direct access to the dual port RAM. The process data of the slaves are always consistent, i.e. the user gets the data from one and the same DP cycle.

Parallel operation of DP 5613 (DP master) and DP-Base (DP master, DP slave) is not possible.

Event/filter mechanism

The user receives up-to-date data through two access mechanisms:

- Cyclic polling of the DP slaves (higher load on host CPU)
- Signaling by new kind of event/filter mode in the event of changes in the input data of a slave (minimum load on host CPU)

Both alternatives can be combined. Optimum utilization of the PC is therefore possible for the relevant application.

The new event/filter mechanism can also be used for:

- Signaling by interrupt for diagnostic messages from slaves
- In equidistant mode signaling by interrupt:
  - Start DP cycle
  - End of cyclic data exchange with the DP slaves (from hardware version 3, available soon)

Equidistant operation adjustable with STEP 7 V5.1 or higher or NCM PC V5. 1+SP2.

Functions
(continued)

FastLogic
(rapid shutdown)

FastLogic means that the CP 5614 can react automatically to up to 4 plant states. This achieves a fast response time and independence from the host application, e.g. for rapid equipment shutdown.

DP programming interface

The DP programming interfaces of the CP 5613 and CP 5614 are identical.

The DP programming interface of the CP 5614 has the following functional scope:

- DP slave
- DP master class 1 including acyclic DP extensions.
- DP master class 2 (available soon) incl. non-cyclic DP expansions

Access to the process data is directly through the dual port RAM. The dual port RAM interface not only offers fast access as a DP master/slave but also a basis for portability to other operating system environments (e.g. VXWorks, QNX, RMOS).

A DP master and a DP slave library (DP_BASE.DLL or DPS_BASE.DLL) offer administrative function calls (initialization and management services as well as diagnostic functions).

A transfer mechanism (application in the PC) can be set through software as a link for data exchange between the master and slave interface.

In this manner, defined I/O data can be transferred between the master interface and the slave interface.

The two connected PROFIBUS networks can be operated with different PROFIBUS bus parameters due to their mutual independence.

Development kit DK-5613

The development kit DK-5613 offers access to the functions DP master class 1 including non-cyclic DP expansions

With the software development kit DK-5613 the communications processors CP 5613 and CP 5614 can be integrated in any operating system environments. The kit contains the necessary source code including the descriptions in PDF format and can be downloaded from the Internet

Access to process data with DP-5613

The user interface is compatible with software package DP-5412.

- DP master class 1

The CP 5614 operates as a DP master class 1 according to IEC 61158/EN 50170 and handles data transfer with the distributed stations (DP slaves) completely independently. In a fixed, repetitive message cycle, the central controller exchanges information with the DP slaves (e.g. ET 200S). The DP programming interface (DPLib.DLL) provides the PC programmer with function calls for data transfer. In addition, the DP interface offers the functions SYNC and FREEZE as well as the activation and deactivation of slaves.

The DP functional expansions with respect to master class 1 enable non-cyclic read and write functions (DS_READ, DS_WRITE) as well as alarm acknowledgement (ALARM_ACK) to be performed parallel to cyclic data traffic. The non-cyclic transmitted data (e.g. parameterization data) are changed very rarely in comparison with the cyclic measured values and are transmitted with low priority parallel to the fast cyclic useful data transfer. Interrupt acknowledgment in the master ensures reliable transfer of the interrupts from DP slaves (DS_READ, DS_WRITE, DS_DATA_TRANSPORT).

Parallel operation of DP-Base and DP 5613 software is not possible.

- DP master class 2

In addition to DP master class 1 services, the CP 5614 also offers DP master class 2 services in connection with the DP programming interface according to IEC 61158/ EN 50170. Devices of this type (programming, configuration or operating devices) are used for commissioning, configuring the DP system or system operation in normal operation (diagnostics)

The DP programming interface provides the following services:

- Master diagnostics
- Slave diagnostics
- Read inputs/outputs of a slave
- Reading configuration data and
- Changing the slave address.

The extended DP functions also include non-cyclic access to the parameters and measured values of a slave (e.g. field devices of the process automation, intelligent HMI devices).
This type of slave has to be supplied with extensive parameter data during startup and normal operation. (DS_READ, DS_WRITE, DS_DATA_TRANSPORT).

Functions
(continued)

Software for PG/OP communication

This software enables programming of the SIMATIC S5/S7 controllers through PROFIBUS in connection with STEP 5/STEP 7. The PG/OP communication for the CP 5614 is already available after installing the CP 5614 (DP-Base).
No additional software package is needed.

S5-compatible communication (SEND/RECEIVE based on the FDL interface)

SEND/RECEIVE (FDL interface) is already available after installation of the CP 5614 (DP-Base) and offers data exchange services for diagnostics and management.
No additional software package is needed.

Software for S7 communication (S7-5613)

The user interface is compatible with S7-5412.

SIMATIC S7 system components communicate with each other through S7 communication. The S7 programming interface enables PG/PC application programs access to SIMATIC S7 system components. The SIMATIC S7 data can be accessed easily and flexibly.

The following services are available with S7 communication:

Administrative services

- Link management
- Mini database
- Trace.

Data transfer services

- Reading/writing of variables

BSEND/BRECEIVE
(up to 64 KB per task).

Software for PROFIBUS-FMS interface (FMS-5613)

The user interface is compatible with software FMS-5412.

The FMS programming interface allows AT-compatible PCs to exchange data with FMS-capable controllers (e.g. S5/S7) and field devices of other manufacturers. The use of the FMS protocol ensures open communication.

The following services are available through the FMS interface:

- Administrative services
- CRL management services
- FMS connection management services
- Object directory management services for clients and server.
- Variable services for clients and server (read, write, information report).
- Server functionality
- VFD (virtual field device) services for clients and server.
- Bus access information services (live list).

  Trace and mini database

User interfaces

- OPC interface

The OPC server contained in the respective software package can be used as a standard programming interface for the protocols PROFIBUS-DP, S7 communication and PROFIBUS-FMS to connect automation applications to OPC-capable Windows applications (Office, HMI systems etc.).

- Programming interface through C-Library

The programming interfaces for existing applications are implemented as a Dynamic Link Library (DLL). The following compilers can therefore be used in conjunction with the SIMATIC NET products:

- Microsoft Visual C/C++ V6.0
- Microsoft Visual Basic V6.0

For Borland programming interfaces (e.g. DELPHI) partner solutions of AIXO are available.

For solutions for other operating systems, see the development kit DK-5613.

The DK-5613
can be found in the Internet at:



http://www.siemens.de/simatic-net/dk5613

CP 5614 communications processor

Configuration

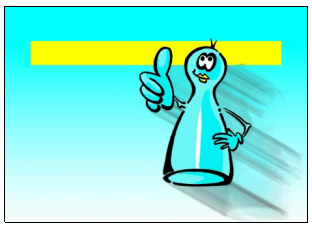
- Configuration of S7 communication protocols, S5-compatible communication, DP protocol (DP/DPV1/DPV2) and FMS protocol is executed in STEP 7/NCM PC, V5.1+SP2 or higher.
- The configuring tool NCM PC is included in delivery of the PROFIBUS software package.
- NCM PC is a component of Advanced PC Configuration.

Diagnosis

Extensive diagnostic tools are available (for installation, commissioning and operation) for the module itself and for the PROFIBUS network.

Therefore a PROFIBUS network can be started up quickly and easily with a CP 5614.

Designed for Industry



- Only 1 slot is required for a master and slave
- Fastest possible access to process data through dual port RAM
- Short response time with FastLogic
- Process-consistent data from a DP cycle
- Higher computing performance in the PC by relieving the host CPU
- Fast commissioning through Plug&Play and diagnostic tools
- Implementation for motion control applications through support of the equidistant mode
- Easy portability to other operating systems through a dual port RAM interface
- Can also be used in high temperature industrial environments.

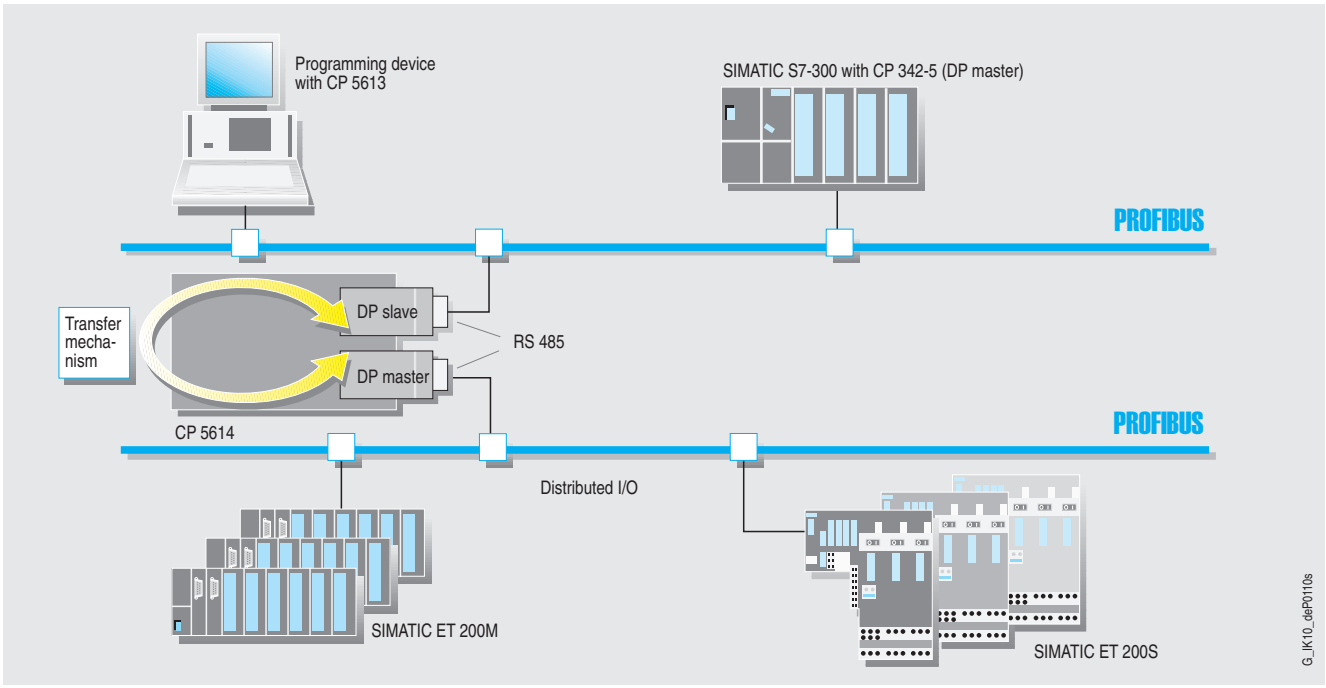


Fig. 3/114 Configuration example with CP 5614

Technical specifications

Baud rates		9.6 kbit/s to 12 Mbit/s
Interfaces, connection		
• PROFIBUS-DP master		9-pin Sub-D socket
• PROFIBUS-DP slave		9-pin Sub-D socket
Supply voltage (from PCI)		5 V DC, ±5%
Current consumption from 5 V DC	approx.	1.6 A
Power loss	approx.	8.0 W
Perm. ambient conditions		
• Operating temperature		
– Without fan		+5 °C to +40 °C
– With fan (air current 0.5 m/s)		+5 °C to +60 °C
• Transport/storage temperature		–40 °C to +70 °C
• Relative humidity	max.	95% at +25 °C
Design		
• Module format		PCI card
• Dimensions (W × H) in mm		107 × 168
• Weight	approx.	300 g
• Space required		1 × PCI slot
Performance data Single protocol mode		
• No. of connectable DP slaves	max.	122
• Data area of slave interface: input data, output data, diagnostics data		244 byte each
• No. of parallel FDL tasks to be processed	max.	120
• No. of PG/OP and S7 connections	max.	50 1)
• No. of FMS connections	max.	40 2)

1) For credit = 1; PDU size ≤ 480 byte

2) For credit = 1

Ordering data

	Order No.
CP 5614 communications processor PCI card with master and slave connection to PROFIBUS, incl. Windows NT 4.0 WS, server, Windows 2000 Pro, server driver, DPRAM Interface for DP master and slave, PG and FDL, configuration software with electronic manual on CD-ROM	**6GK1 561-4AA00**
Development kit 1) **DK-5613** Software development kit for CP 5613/CP 5614 for integration in any operating system environments on systems with PCI slot	

1) Download from the Internet at:



http://www.siemens.de/simatic-net/dk5613

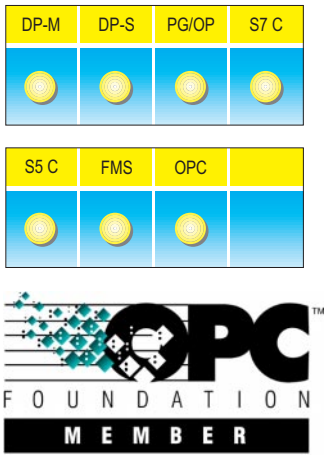
Ordering data

	Order No.
DP-5613/Windows V6.0 Software for DP protocol incl. PG/OP communication, FDL, DP-OPC server; NCM PC under Windows NT 4.0 WS, server; Windows 2000 Pro, server; for CP 5613/ CP 5614/CP 5613 FO/CP 5614 FO; with electronic manual; on CD-ROM, in German/English	**6GK1 713-5DB60-3AA0**
S7-5613/Windows V6.0 Software for S7 communication incl. PG/OP communication, FDL, S7-OPC server; NCM PC under Windows NT 4.0 WS, server; Windows 2000 Pro, server; for CP 5613/ CP 5614/CP 5613 FO/CP 5614 FO; with electronic manual; on CD-ROM, in German/English	**6GK1 713-5CB60-3AA0**
FMS-5613/Windows V6.0 Software for FMS protocol incl. PG/OP communication, FDL, FMS-OPC server; NCM PC under Windows NT 4.0 WS, server; Windows 2000 Pro, server; for CP 5613/ CP 5614/CP 5613 FO/CP 5614 FO; with electronic manual; on CD-ROM, in German/English	**6GK1 713-5FB60-3AA0**
Manual CP 5613/CP 5614 and SOFTNET for PROFIBUS Paper version Including: Description of the interfaces (FMS, DP, S7, FDL), OPC server, configuration tools	
• German	**6GK1 971-5DA00-0AA0**
• English	**6GK1 971-5DA00-0AA1**
PROFIBUS FastConnect RS 485 bus connector Plug 180 With 180° cable outlet	**6GK1 500-0FC00**
PROFIBUS 12M bus terminal Bus terminal for connecting PROFIBUS stations up to 12 Mbit/s with connecting cable	**6GK1 500-0AA10**
SIMATIC NET Software Update Service for Industrial Ethernet, PROFIBUS, OPC server, including manuals, on CD-ROM, in German/English	**6GK1 704-0AA00-3AA2**
SIMATIC NET Manual Collection Electronic manuals for communication systems, protocols, products on CD-ROM German/English	**6GK1 975-1AA00-3AA0**

Connection options for PG/PC

CP 5614 FO communications processor

Overview





- PCI card with microprocessor for system interfacing for PCs and SIMATIC PG/PC to the optical PROFIBUS with integrated interface up to 12 Mbit/s
- Integrated FOC interface for direct FO connection
- Communication services:
  - PROFIBUS-DP master interface according to IEC 61158/EN 50170 on a PCI card
  - PROFIBUS-DP slave interface according to IEC 61158/EN 50170 on a PCI card
  - PG/OP communication with STEP 5 and STEP 7.
  - S7 communication
  - S5-compatible communication (SEND/RECEIVE) on the basis of the FDL interface
  - PROFIBUS-FMS according to IEC 61158/EN 50170
- High performance through direct dual port RAM access
- Event and filter mechanism for relieving the host CPU.
- Multiple protocol operation and parallel operation of up to 4 CPs
- OPC servers are supplied with the communication software

Application

The CP 5614 FO enables connection to PROFIBUS-DP for SIMATIC PG/PC and AT-compatible PCs with PCI slot under Windows NT 4.0 and Windows 2000.

It can be either a DP master or a DP slave independently of each other. In this way two different PROFIBUS networks can be connected in a hierarchical structure to one PC with a PROFIBUS card and can exchange data. The CP 5614 FO provides high performance support for control tasks on the PC (e.g. PC-based control, numeric control, robot control).

Design

- Short PCI card
- 2 duplex sockets for connection of plastic and PCF FOCs with 2 simplex plugs each to the optical PROFIBUS
- 9-pin Sub-D socket for connecting to PROFIBUS
- Connection for external power supply. This means data transmission on the optical line is not interrupted when the PC is switched off.
- Diagnostic LEDs.
- Parallel operation of up to 4 CPs.
- The software can switch assignment of master and slave to the optical and electrical interface.

The module is installed using standard PCI mechanisms (plug & play).

It is connected to the optical PROFIBUS with integrated interface and OBT through:

Plastic and PCF FOCs with simplex plugs.

It is connected to the electrical PROFIBUS through

- Plastic and PCF fiber-optic cable with simplex plugs to an OBT.

Functions

PROFIBUS-DP

Access to process data

The CP 5614 is operated as a PROFIBUS-DP master and slave module which holds the process image (input/output and diagnostic data) in the dual port RAM. The high-performance data exchange with the PROFIBUS slaves is handled independently by the CP 5614 FO hardware.
The user has direct access to the dual port RAM.

The process data of the slaves are always consistent, i.e. the user gets the data from one and the same DP cycle.

Parallel operation of DP 5613 (DP master) and DP-Base (DP master, DP slave) is not possible.

Event/filter mechanism

The user receives up-to-date data through two access mechanisms:

- Cyclic polling of the DP slaves (higher load on host CPU)
- Signaling by new kind of event/filter mode in the event of changes in the input data of a slave (minimum load on host CPU)

Both alternatives can be combined. Optimum utilization of the PC is therefore possible for the relevant application.

The new event/filter mechanism can also be used for:

- Signaling by interrupt for diagnostic messages from slaves
- In equidistant mode signaling by interrupt:
  - Start DP cycle
  - End of cyclic data exchange with the DP slaves (from hardware version 3, available soon)

Equidistant operation adjustable with STEP 7 V5.1 or higher or NCM PC V5. 1+SP2.

Functions
(continued)

FastLogic
(rapid shutdown)

FastLogic means that the CP5614 FO can react automatically to up to 4 plant states. This achieves a fast response time and independence from the host application, e.g. for rapid equipment shutdown.

DP programming interface

The DP programming interfaces of the CP 5613 and CP 5614 FO are identical.

The DP programming interface of the CP 5614 FO has the following functions:

- DP slave
- DP master class 1 including acyclic DP extensions.
- DP master class 2 (available soon) incl. non-cyclic expansions

Access to the process data is directly through the dual port RAM. The dual port RAM interface not only offers fast access as a DP master/slave but also a basis for portability to other operating system environments (e.g. VXWorks, QNX, RMOS).

A DP master and a DP slave library (DP_BASE.DLL or DPS_BASE.DLL) offer administrative function calls (initialization and management services as well as diagnostic functions).

A transfer mechanism (application in the PC) can be set through software as a link for data exchange between the master and slave interface.

In this manner, defined I/O data can be transferred between the master interface and the slave interface.

The two connected PROFIBUS networks can be operated with different PROFIBUS bus parameters due to their mutual independence.

Development kit DK-5613

The development kit DK-5613 offers access to the functions DP master class 1 including non-cyclic DP expansions

With the software development kit DK-5613 the communications processors CP 5613 and CP 5614 can be integrated in any operating system environments. The kit contains the necessary source code including the descriptions in PDF format and can be downloaded from the Internet

Access to process data with DP-5613

The user interface is compatible with software package DP-5412.

- DP master class 1

The CP 5614 FO operates as a DP master class 1 according to IEC 61158/EN 50170 and handles data transfer with the distributed stations (DP slaves) completely independently. In a fixed, repetitive message cycle, the central controller exchanges information with the DP slaves (e.g. ET 200S). The DP programming interface (DPLib.DLL) provides the PC programmer with function calls for data transfer. In addition, the DP interface offers the functions SYNC and FREEZE as well as the activation and deactivation of slaves.

The DP functional expansions with respect to master class 1 enable non-cyclic read and write functions (DS_READ, DS_WRITE) as well as alarm acknowledgement (ALARM_ACK) to be performed parallel to cyclic data traffic. The non-cyclic transmitted data (e.g. parameterization data) are changed very rarely in comparison with the cyclic measured values and are transmitted with low priority parallel to the fast cyclic useful data transfer. Interrupt acknowledgment in the master ensures reliable transfer of the interrupts from DP slaves (DS_READ, DS_WRITE, DS_DATA_TRANSPORT).

Parallel operation of DP-Base and DP 5613 software is not possible.

- DP master class 2

In addition to DP master class 1 services, the CP 5614 FO also offers DP master class 2 services in connection with the DP programming interface according to IEC 61158/ EN 50170. Devices of this type (programming, configuration or operating devices) are used for commissioning, configuring the DP system or system operation in normal operation (diagnostics).

The DP programming interface provides the following services:

- Master diagnostics
- Slave diagnostics
- Read inputs/outputs of a slave
- Reading configuration data and
- Changing the slave address.

The extended DP functions also include non-cyclic access to the parameters and measured values of a slave (e.g. field devices of the process automation, intelligent HMI devices.
This type of slave has to be supplied with extensive parameter data during startup and normal operation. (DS_READ, DS_WRITE, DS_DATA_TRANSPORT).

Functions
(continued)

Software for PG/OP communication

This software enables programming of the SIMATIC S5/S7 controllers through PROFIBUS in connection with STEP 5/STEP 7. The PG/OP communication for the CP 5614 FO is already available after installing the CP5614 FO (DP-Base). No additional software package is needed.

S5-compatible communication (SEND/RECEIVE based on the FDL interface)

SEND/RECEIVE (FDL interface) is already available after installation of the CP5614 FO (DP-Base) and offers data exchange services for diagnostics and management. No additional software package is needed.

Software for S7 communication (S7-5613)

The user interface is compatible with S7-5412.

SIMATIC S7 system components communicate with each other through S7 communication. The S7 programming interface enables PG/PC application programs access to SIMATIC S7 system components. The SIMATIC S7 data can be accessed easily and flexibly.

The following services are available with S7 communication:

Administrative services

- Link management
- Mini database
- Trace

Data transfer services

- Reading/writing of variables

BSEND/BRECEIVE
(up to 64 KB per task).

Software for PROFIBUS-FMS interface (FMS-5613)

The user interface is compatible with software FMS-5412.

The FMS programming interface allows AT-compatible PCs to exchange data with FMS-capable controllers (e.g. S5/S7) and field devices of other manufacturers. The use of the FMS protocol ensures open communication.

The following services are available through the FMS interface:

- Administrative services
- CRL management services
- FMS connection management services
- Object directory management services for clients and server.
- Variable services for clients and server (read, write, information report).
- Server functionality
- VFD (virtual field device) services for clients and server.
- Bus access information services (live list).
- Trace and mini database

User interfaces

- OPC interface

The OPC server contained in the respective software package can be used as a standard programming interface for the protocols PROFIBUS-DP, S7 communication and PROFIBUS-FMS to connect automation applications to OPC-capable Windows applications (Office, HMI systems etc.).

- Programming interface through C-Library

The programming interfaces for existing applications are implemented as a Dynamic Link Library (DLL). The following compilers can therefore be used in conjunction with the SIMATIC NET products:

- Microsoft Visual C/C++ V6.0
- Microsoft Visual Basic V6.0

For Borland programming interfaces (e. DELPHI) partner solutions of the AIXO Co. are available.

For solutions for other operating systems, see the development kit DK-5613.

The DK-5613
can be found in the Internet at:



http://www.siemens.de/simatic-net/dk5613

Configuration

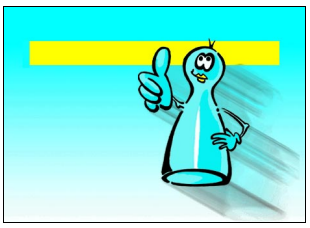
- Configuration of S7 communication protocols, S5-compatible communication, DP protocol (DP/DPV1/DPV2) and FMS protocol is executed in STEP 7/NCM PC, V5.1+SP2 or higher.
- The configuring tool NCM PC is included in delivery of the PROFIBUS software package.
- NCM PC is a component of Advanced PC Configuration.

Diagnosis

Extensive diagnostic tools are available (for installation, commissioning and operation) for the module itself and for the PROFIBUS network.

Therefore a PROFIBUS network can be started up quickly and easily with a CP 5614 .

Designed for Industry



- Only 1 slot is required for a master and slave.
- Direct connection to the optical PROFIBUS through integrated FOC interface
- Fastest possible access to process data through dual port RAM
- Short response time with FastLogic
- Process-consistent data from a DP cycle
- Higher computing performance in the PC by relieving the host CPU.
- Easy portability to other operating systems through a dual port RAM interface
- Implementation of motion control applications through support of the equidistant mode
- Can also be used in high temperature industrial environments.
- Flexible application through switchable assignment of optical and electrical interface to master and slave

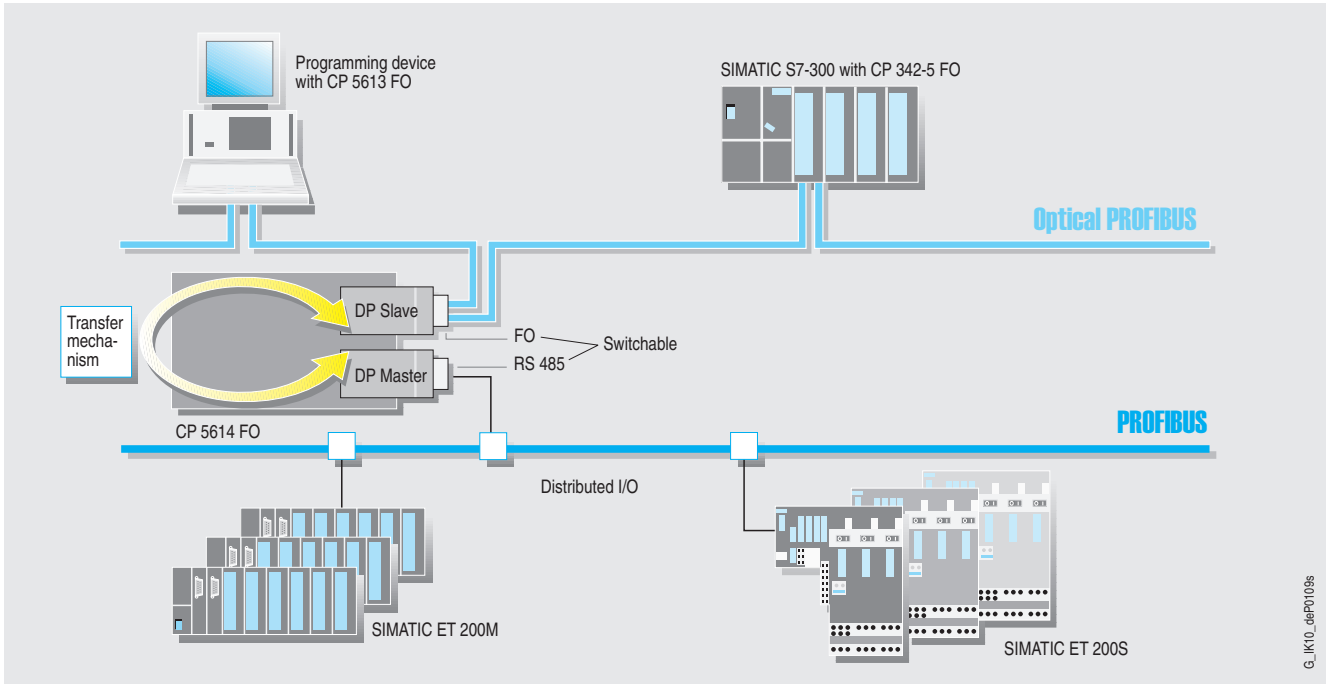


Fig. 3/115 Configuration example with CP 5614 FO

CP 5614 FO communications processor

Technical specifications

Baud rates		9.6 kbit/s to 12 Mbit/s
Basic interface setting		
• PROFIBUS master		2 × duplex socket (FO)
• PROFIBUS slave		9-pin Sub-D socket
Interfaces switchable through software call		
• PROFIBUS master		9-pin Sub-D socket
• PROFIBUS slave		2 × duplex socket (FO)
• External power supply (optional) through standard external power supply		Low voltage socket 3.5 mm/1.3 mm ±•›–
Supply voltage (from PCI)		5 V DC ±5% 12 V DC ±5%
Current consumption		
• from 5 V DC		1.6 A
• from 12 V DC		0.3 A
Power loss		8 W
Supply voltage (optional) external power supply		9 –12 V DC
• Current consumption		0.4 A
• Power loss		3.6 – 4.8 W
Perm. ambient conditions		
• Operating temperature – Without fan – With fan (air current 0.5 m/s)		 +5 °C to +40 °C +5 °C to +60 °C
• Transport/storage temperature		–40 °C to +70 °C
• Relative humidity	max.	95% at +25 °C
Design		
• Module format		PCI card
• Dimensions (W × H) in mm		107 × 168
• Weight	approx.	300 g
• Space required		1 × PCI slot
Performance data Single protocol mode		
• No. of connectable DP slaves	max.	122
• Data area of slave interface: input data, output data, diagnostics data		244 byte each
• No. of parallel FDL tasks to be processed	max.	120
• No. of PG/OP and S7 connections	max.	50 1)
• No. of FMS connections	max.	40 2)

1) For credit = 1; PDU size ≤ 480 byte

2) For credit = 1

Ordering data

	Order No.
CP 5614 FO communications processor PCI card with master and slave connection to PROFIBUS, incl. Windows NT 4.0 WS, server, Windows 2000 Pro, server driver, DPRAM Interface for DP master and slave, configuration software with electronic manual on CD-ROM	**6GK1 561-4FA00**
Development kit 1) **DK-5613** Software development kit for CP 5613/CP 5614 for integration in any operating system environments on systems with PCI slot	

Ordering data

	Order No.
DP-5613/Windows V6.0 Software for DP protocol incl. PG/OP communication, FDL, DP-OPC server; NCM PC under Windows NT 4.0 WS, server; Windows 2000 Pro, server; for CP 5613/ CP 5614/CP 5613 FO/CP 5614 FO; with electronic manual; on CD-ROM, in German/English	**6GK1 713-5DB60-3AA0**
S7-5613/Windows V6.0 Software for S7 communication incl. PG/OP communication, FDL, S7-OPC server; NCM PC under Windows NT 4.0 WS, server; Windows 2000 Pro, server; for CP 5613/ CP 5614/CP 5613 FO/CP 5614 FO; with electronic manual; on CD-ROM, in German/English	**6GK1 713-5CB60-3AA0**
FMS-5613/Windows V6.0 Software for FMS protocol incl. PG/OP communication, FDL, FMS-OPC server; NCM PC under Windows NT 4.0 WS, server; Windows 2000 Pro, server; for CP 5613/ CP 5614/CP 5613 FO/CP 5614 FO; with electronic manual; on CD-ROM, in German/English	**6GK1 713-5FB60-3AA0**
PROFIBUS FastConnect RS 485 bus connector Plug 180	**6GK1 500-0FC00**
PROFIBUS 12M bus terminal	**6GK1 500-0AA10**
PROFIBUS plastic fiber-optic, simplex plug / polishing set	**6GK1 901-0FB00-0AA0**
PROFIBUS plastic fiber-optic, stripping tool set	**6GK1 905-6PA10**
Connection adapters • 50 pcs.	**6ES7 195-1BE00-0XA0**
Manual CP 5613/CP 5614 and SOFTNET for PROFIBUS Paper version Including: Description of the interfaces (FMS, DP, S7, FDL), OPC server, configuration tools	
• German	**6GK1 971-5DA00-0AA0**
• English	**6GK1 971-5DA00-0AA1**
SIMATIC NET Software Update Service For Industrial Ethernet, PROFIBUS, OPC server including manuals, on CD-ROM, German/English	**6GK1 704-0AA00-3AA2**
SIMATIC NET Manual Collection Electronic manuals for communication systems, protocols, products on CD-ROM German/English	**6GK1 975-1AA00-3AA0**

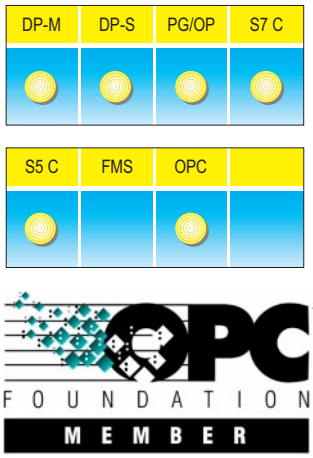
1) Download from the Internet at:



http://www.siemens.de/simatic-net/dk5613

CP 5511 communications processor

Overview





- For connecting PG/PCs and notebooks with PCMCIA slot to PROFIBUS and MPI of the SIMATIC S7
- Communication services:
  - PROFIBUS-DP master class 1 with SOFTNET-DP.
  - PROFIBUS-DP master class 2 including acyclic DP expansions with SOFTNET-DP.
  - PROFIBUS-DP slave with SOFTNET-DP slave.
  - PG/OP communication
  - S7 communication with SOFTNET S7.
  - S5-compatible communication (SEND/RECEIVE based on the FDL interface) with SOFTNET-DP or SOFTNET-S7.
- PCMCIA card type II; for PG/PCs with PCMCIA slot and notebooks
- Used with:
  - STEP 7, ProTool®, NCM PC, Micro/Win, ProTool/Pro®, SIMATIC PDM (for PG/OP communication)
  - COM PROFIBUS
  - SOFTNET S7 (for S7 communication).
  - SOFTNET DP (for DP).
- OPC servers are supplied with the communication software

Application

The CP 5511 enables connection of programming devices and AT-compatible PCs to PROFIBUS and to the multipoint interface (MPI) of SIMATIC S7:

- For connecting PCMCIA slot and notebooks

Design

- PCMCIA card type II
- Adapter with 9-pin Sub-D socket for connection to PROFIBUS

Functions

The CP 5511 is operated under different software packages and allows the user to execute programming device functions and PC functions through PROFIBUS and the multipoint interface (MPI).

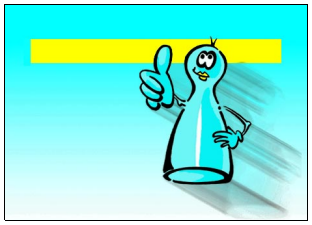
Only one CP can be operated for each PG/PC/notebook. Similarly only one protocol (PROFIBUS-DP, S7 communication or FDL) can be used for each CP.

The following software packages support the CP 5511:

- STEP 7 as of V3.2
  Drivers for the CP 5511 are supplied with STEP 7
- SOFTNET-S7
  The S7 programming interface can be used with this package
- SOFTNET-DP
  With this the CP 5511 can be used as a PROFIBUS-DP master class 1 or 2
- SOFTNET-DP slave
  for using the CP 5511 as a PROFIBUS-DP slave
- COM PROFIBUS as of V3.3
  With this package the CP 5511 can be used for commissioning or diagnostics (DP online functions) for PROFIBUS-DP systems
- STEP 7-Micro/Win as of V2.1
  Hardware base for the programming software of the SIMATIC S7-200 programmable controller
- ProTool, ProTool/PRO
  The CP 5511 can be used as the hardware basis for the configuration tool for SIMATIC operator panels, touch panels and text displays.
- NCM PC
  drivers for the CP 5511 are included in delivery of the NCM PC.

CP 5511 communications processor

Designed for Industry



- Connection for notebooks or other portable PCs to PROFIBUS (e.g. for diagnostics and commissioning)
- Easy installation and commissioning

Technical specifications

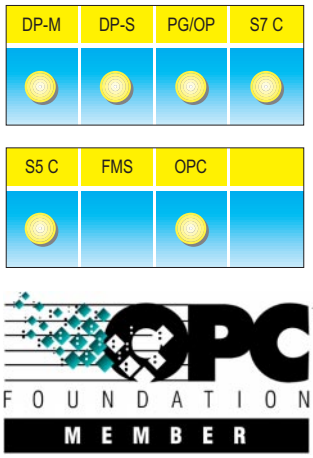
Data transfer rate		9.6 kbit/s to 12 Mbit/s
Interfaces		
• Connection to PROFIBUS		9-pin Sub-D socket
• Connection to PG/PC		PCMCIA slot type II
Supply voltage		+5 V DC ±5%
Current consumption		typ. 270 mA, max. 360 mA
Power loss		1.8 W
Perm. ambient conditions		
• Operating temperature		+5 °C to +40 °C
• Transport/storage temperature		–20 °C to +60 °C
• Relative humidity	max.	95% at +25 °C
Design		
• Module format		PCMCIA type II
• Dimensions (W × H × D) in mm		54 × 85 × 5
• Weight		
– without adapter	approx.	30 g
– with adapter	approx.	130 g
• Space required		1 × PCMCIA slot type II

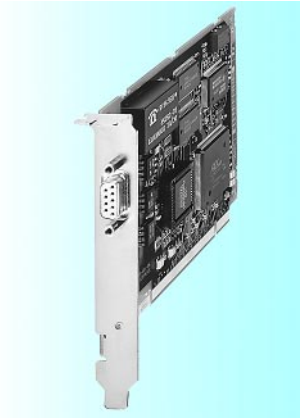
Ordering data

	Order No.
CP 5511 communications processor PCMCIA card for connecting a PG or PC to PROFIBUS or MPI	**6GK1 551-1AA00**
SOFTNET-S7/Windows V6.0 Software for S7 communication incl. FDL, S7-OPC server, NCM PC under Windows NT 4.0 WS, server; Windows 2000 Pro, server; for CP 5511 and CP 5611, with electronic manual on CD-ROM	**6GK1 704-5CW60-3AA0**
SOFTNET-DP/Windows V6.0 Software for DP protocol (master class 1 and 2), FDL incl. DP-OPC server, NCM PC under Windows NT 4.0 WS, server; Windows 2000 Pro, server; for CP 5511 and CP 5611, with electronic manual on CD-ROM	**6GK1 704-5DW60-3AA0**
SOFTNET-DP Slave/Windows V6.0 Software for DP slave, incl. OPC server, under Windows NT 4.0 WS, server; Windows 2000 Pro, server; for CP 5511 and CP 5611, with electronic manual on CD-ROM	**6GK1 704-5SW60-3AA0**
PROFIBUS FastConnect RS 485 bus connector Plug 180 With 180° cable outlet	**6GK1 500-0FC00**
Manual CP 5613/CP 5614 and SOFTNET for PROFIBUS Paper version Including: Description of the interfaces (FMS, DP, S7, FDL), OPC server, configuration tools	
• German	**6GK1 971-5DA00-0AA0**
• English	**6GK1 971-5DA00-0AA1**
SIMATIC NET Software Update Service For Industrial Ethernet, PROFIBUS, OPC server, including manuals, on CD-ROM, German/English	**6GK1 704-0AA00-3AA2**
SIMATIC NET Manual Collection Electronic manuals for communication systems, protocols, products on CD-ROM German/English	**6GK1 975-1AA00-3AA0**

CP 5611 communications processor

Overview





- For connecting PG/PC to PROFIBUS and MPI of the SIMATIC S7
- Communication services:
  - PROFIBUS-DP master class 1 with SOFTNET-DP.
  - PROFIBUS-DP master class 2 including acyclic DP expansions with SOFTNET-DP.
  - PROFIBUS-DP slave with SOFTNET-DP slave.
  - PG/OP communication
  - S7 communication with SOFTNET S7.
  - S5-compatible communication (SEND/RECEIVE on the basis of the FDL interface) with SOFTNET-DP or SOFTNET-S7
- Short PCI card for programming device / PC with PCI slot.
- Used with:
  - STEP 7, STEP 7-Micro/Win, SIMATIC NCM PC, ProTool, ProTool/Pro, SIMATIC PDM (for PG/OP communication)
  - COM PROFIBUS
  - SOFTNET-S7 (for S7 communication).
  - SOFTNET DP (for DP).
- OPC servers are supplied with the communication software

Application

The CP 5611 enables the connection of programming devices and PCs to PROFIBUS and multipoint-capable MPI interfaces of the SIMATIC S7.

- For PGs/PCs with PCI slot.

Design

- Short PCI card
- 9-pin Sub-D socket for connection to PROFIBUS

Functions

The CP 5611 is operated under different software packages and allows the user to execute programming device functions and PC functions through PROFIBUS and the multipoint interface (MPI).

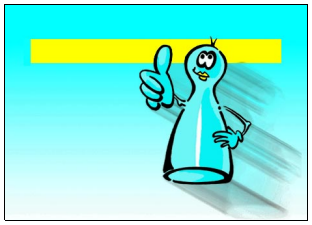
Only one CP can be operated for each programming device/PC. Similarly only one protocol (PROFIBUS-DP, S7 communication or FDL) can be used for each CP.

The following software packages support the CP 5611:

- STEP 7 V3.2 upwards under Windows 95 and NT 4.0; Windows 98 from V4.02 and K4.02.5. Drivers for the CP 5611 are included in delivery of STEP 7.
- SOFTNET-S7 The S7 programming interface can be used with this package
- SOFTNET-DP With this the CP 5611 can be used as a PROFIBUS-DP master class 1 or 2
- SOFTNET-DP Slave For using the CP 5611 as a PROFIBUS-DP slave
- COM PROFIBUS as of V3.3 The CP 5611 can be used with this package for commissioning or diagnostics (DP online functions) for PROFIBUS-DP systems
- STEP 7-Micro/Win as of V2.1 Hardware base for the programming software of the SIMATIC S7-200 programmable controller
- ProTool, ProTool/PRO The CP 5611 can be used as the hardware basis for the configuration tool for SIMATIC operator panels, touch panels and text displays.

CP 5611 communications processor

Designed for Industry



- Connection for portable PCs to PROFIBUS (e.g. for diagnostics and commissioning)
- Easy installation and commissioning

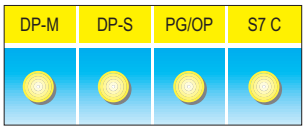
Technical specifications

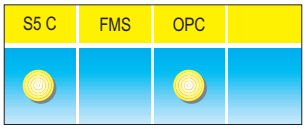
Data transfer rate		9.6 kbit/s to 12 Mbit/s
Interfaces		
• Connection to PROFIBUS		9-pin Sub-D socket
Supply voltage		+5 V DC ±5%
Current consumption		0.5 A
Power loss		2.0 W
Perm. ambient conditions		
• Operating temperature		+5 °C to +40 °C
• Transport/storage temperature		–20 °C to +60 °C
• Relative humidity	max.	95% at +25 °C
Design		
• Module format		PCI card
• Dimensions (H × D) in mm		102 × 130
• Weight	approx.	100 g
• Space required		1 × PCI slot

Ordering data

	Order No.
CP 5611 communications processor PCI card for connecting a PG or PC to PROFIBUS	**6GK1 561-1AA00**
CP 5611 MPI Consists of PCI card CP 5611 and MPI cable, 5 m	**6GK1 561-1AM00**
SOFTNET-S7/Windows V6.0 Software for S7 communication incl. FDL, S7-OPC server, NCM PC under Windows NT 4.0 WS, server; Windows 2000 Pro, server; for CP 5511 and CP 5611, with electronic manual on CD-ROM	**6GK1 704-5CW60-3AA0**
SOFTNET-DP/Windows V6.0 Software for DP protocol (master class 1 and 2), FDL incl. DP-OPC server, NCM PC under Windows NT 4.0 WS, server; Windows 2000 Pro, server; for CP 5511 and CP 5611, with electronic manual on CD-ROM	**6GK1 704-5DW60-3AA0**
SOFTNET-DP Slave/Windows V6.0 Software for DP slave, incl. OPC server, under Windows NT 4.0 WS, server; Windows 2000 Pro, server; for CP 5511 and CP 5611, with electronic manual on CD-ROM	**6GK1 704-5SW60-3AA0**
PROFIBUS FastConnect RS 485 bus connector Plug 180 With 180° cable outlet	**6GK1 500-0FC00**
PROFIBUS 12M bus terminal Bus terminal for connecting PROFIBUS stations up to 12 Mbit/s with connecting cable	**6GK1 500-0AA10**
Manual CP 5613/CP 5614 and SOFTNET for PROFIBUS Paper version Including: Description of the interfaces (FMS, DP, S7, FDL), OPC server, configuration tools	
• German	**6GK1 971-5DA00-0AA0**
• English	**6GK1 971-5DA00-0AA1**
SIMATIC NET Software Update Service For Industrial Ethernet, PROFIBUS, OPC server, including manuals, on CD-ROM, German/English	**6GK1 704-0AA00-3AA2**
SIMATIC NET Manual Collection Electronic manuals for communication systems, protocols, products on CD-ROM German/English	**6GK1 975-1AA00-3AA0**

Overview





- Software for linking programmable controllers/PCs and notebooks to automation systems.
- Can be used in conjunction with CP 5511 (PCMCIA), CP 5611 (PCI) and integrated PROFIBUS interface of the SIMATIC PG/PC/PC
- Communication services:
  - PROFIBUS-DP master class 1
  - PROFIBUS-DP master class 2 with non-cyclic expansions
  - PROFIBUS-DP slave
  - PG/OP communication
  - S7 communication
  - S5-compatible communication (SEND/RECEIVE based on the FDL interface)

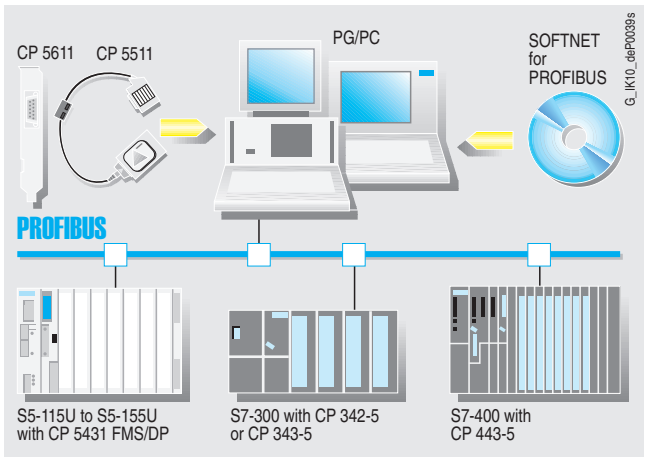


Fig. 3/116 System configuration: SOFTNET for PROFIBUS

- OPC servers are supplied with the communication software

Application

SOFTNET for PROFIBUS can be used to connect PCs to automation systems, e.g. SIMATIC S7, through PROFIBUS.

The following are available as user interfaces:

- DP protocol
- PG/OP communication for SIMATIC S7
- S7 communication
- S5-compatible communication (SEND/RECEIVE based on the FDL interface)

SOFTNET is available for the following interfaces:

- CP 5511 (PCMCIA card)
- CP 5611 (PCI card)
- Integrated PROFIBUS interfaces of SIMATIC programming devices/PCs.

Principle of operation

SOFTNET processes the complete protocol stack in the PC.

This architecture means that, unlike CP 5613 or CP 5614 products the performance capability of the SOFTNET packages depends on the design and/or workload of the PCs used.

Functions

Software for DP protocol (SOFTNET-DP)

- DP master class 1

SOFTNET-DP offers DP master class 1 functions in conjunction with the CP 5511 or CP 5611. In a fixed, repetitive message cycle, the central controller exchanges information with the DP slaves (e.g. ET 200S). The DP programming interface (DPLib.DLL) provides the PC programmer with function calls for data transfer. In addition, the DP interface offers the functions SYNC and FREEZE as well as the activation and deactivation of slaves.

- DP master class 2

In addition to DP master class 1 services, SOFTNET-DP also offers DP master class 2 services.

Devices of this type (programming devices, configuration devices or operating devices) are used on startup, on configuring the DP system or for operating the system during normal operation (e.g. diagnostics). The DP programming interface provides the following services: Master diagnostics, slave diagnostics, reading the inputs and outputs of a slave, reading configuration data and changing the slave address. The extended DP functions also include non-cyclic access to the parameters and measured values of a slave (e.g. field devices of the process automation, intelligent HMI devices. This type of slave must be supplied with extensive parameter data during startup and normal operation (DS_READ, DS_WRITE, DS_DATA_TRANSPORT).

- DP slave (SOFTNET-DP slave)

A DP slave is an I/O device that reads input information and supplies output information to the I/O. The quantity of input and output information depends on the type of device and can be up to 244 byte. The slave applications can be implemented on the PC using the functions SET_INPUT and SET_OUTPUT of the slave programming interface.

Configuration of PROFIBUS-DP takes place with the enclosed COM PROFIBUS PC-Edition. For the slave interface, an example GSD file is provided which can be adapted to the relevant application.

Functions
(continued)

Software for PG/OP communication

No special programming packages are required for the CP 5511 and CP 5611 because the drivers are included in delivery of STEP 7. The SOFTNET-PG S5 software is available for programming the SIMATIC S5 with STEP 5 (V7.2 or higher).

Software for S7 communication (SOFTNET-S7)

SIMATIC S7 system components communicate with each other through S7 communication. The S7 programming interface enables PG/PC application programs access to SIMATIC S7 system components. The SIMATIC S7 data can be accessed easily and flexibly.

The following services are available with S7 communication:

Administrative services

- Link management
- Mini database
- Trace.

Data transfer services

- Reading/writing of variables
- BSEND/BRECEIVE (up to 64 KB per task).

The complete configuration of the S7 communication is performed using STEP 7 V5.0 SP3 and higher. The configurations generated for the PCs using STEP 7 are stored in files which are subsequently transferred to the individual PCs.

Software for S5-compatible communication (SEND/ RECEIVE based on the FDL interface)

This layer 2 based interface is used for communication between

- PG/PC and SIMATIC S5
- PG/PC and SIMATIC S7
- PG/PC and PG/PC

SEND/RECEIVE offers the following services:

- Management services
- Connection establishment services
- Data transfer services

This interface is contained in SOFTNET-DP and SOFTNET-S7. Configuration is not necessary.

User interfaces

- OPC interface

The OPC server contained in the respective software package can be used as a standard programming interface for the protocols PROFIBUS-DP, S7 communication and PROFIBUS-FMS to connect automation applications to OPC-capable Windows applications (Office, HMI systems etc.).

- Programming interface through C-Library

The programming interfaces for existing applications are implemented as a Dynamic Link Library (DLL). The following compilers can therefore be used in conjunction with the SIMATIC NET products:

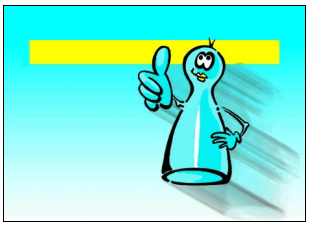
- Microsoft Visual C/C++ Version 6.0
- Microsoft Visual Basic Version 6.0

For Borland programming interfaces (e.g. DELPHI) partner solutions of AIXO are available.

Configuration

- Configuration of S7 communication protocols, S5-compatible communication, DP protocol (DP/DPV1/DPV2) and FMS protocol is executed in STEP 7/NCM PC, V5.1+SP2 or higher.
- The configuring tool NCM PC is included in delivery of the PROFIBUS software package.
- NCM PC is a component of Advanced PC Configuration.

Designed for Industry



- Low-cost integration as PROFIBUS-DP master class 1 or master class 2 with SOFTNET-DP.
- As a PROFIBUS-DP slave with SOFTNET-DP slave
- S7 communication with SOFTNET-S7

Performance data: Single protocol operation

		CP 5511	CP 5611
No. of connectable DP slaves	max.	60	60
No. of parallel FDL tasks to be processed	max.	32	100
No. of PG/OP and S7 connections	max.	8	8

Ordering data

Order No.

DP interface

SOFTNET-DP/Windows V6.0 ▶ **6GK1 704-5DW60-3AA0**
Software for DP protocol (master class 1 and 2), FDL incl. DP-OPC server, NCM PC under Windows NT 4.0 WS, server; Windows 2000 Pro, server; for CP 5511 and CP 5611, with electronic manual on CD-ROM

S7 communication

SOFTNET-S7/Windows V6.0 ▶ **6GK1 704-5CW60-3AA0**
Software for S7 communication incl. FDL, S7-OPC server, NCM PC under Windows NT 4.0 WS, server; Windows 2000 Pro, server; for CP 5511 and CP 5611, with electronic manual on CD-ROM

SOFTNET-DP Slave/Windows V6.0 ▶ **6GK1 704-5SW60-3AA0**
Software for DP slave, incl. OPC server, under Windows NT 4.0 WS, server; Windows 2000 Pro, server; for CP 5511 and CP 5611, with electronic manual on CD-ROM

Manual CP 5613/CP 5614 and SOFTNET for PROFIBUS
Paper version
Including:
Description of the interfaces (FMS, DP, S7, FDL), OPC server, configuration tools
- German ▶ **6GK1 971-5DA00-0AA0**
- English ▶ **6GK1 971-5DA00-0AA1**

SIMATIC NET Software Update Service ▶ **6GK1 704-0AA00-3AA2**
For Industrial Ethernet, PROFIBUS, OPC server, including manuals, on CD-ROM, German/English

SIMATIC NET Manual Collection ▶ **6GK1 975-1AA00-3AA0**
Electronic manuals for communication systems, protocols, products on CD-ROM German/English